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for men who manage

CHEMICAL PROCESSING

Highlights

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Carbon treatment and filtration of whiskey assure sparkling clear product 8

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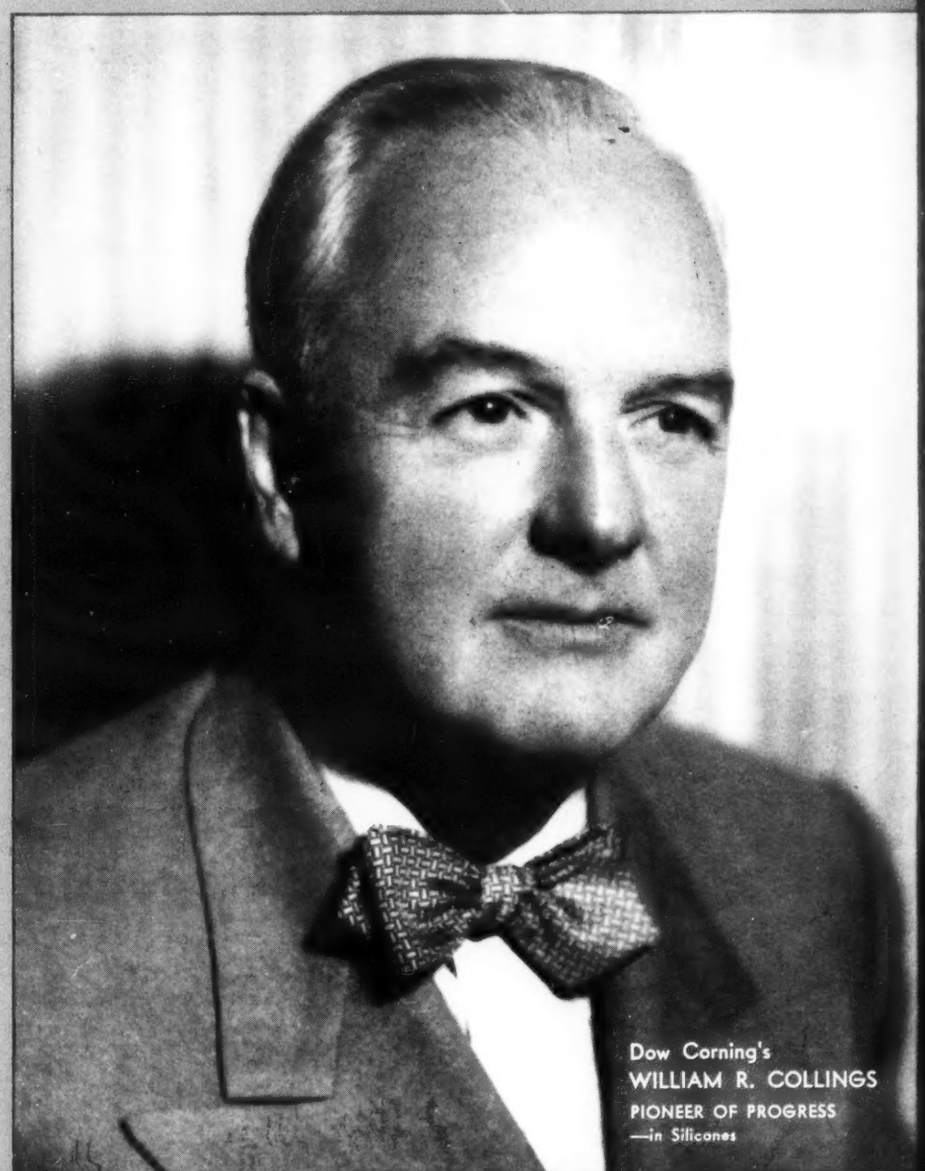

Dow Corning's
WILLIAM R. COLLINGS
PIONEER OF PROGRESS
—in Silicones

The Cover Picture

Silicones are eleven years old — they've already shown great promise. Dr. William R. Collings represents the men who have transformed these new materials from theory to reality . . . see page 6

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"That's Interesting"

"Charley, get up! He's walking again."

Buzzer sounds off Junior's sleepwalking

A little ingenuity and one of Minneapolis-Honeywell's micro switches have been combined by a Woodstock, Illinois parent to keep his sleepwalking son safely at home in bed. The tiny switch is attached to the child's bed and connected to a buzzer in the parent's room. When the boy's weight is removed from the bed, the switch closes, and the parents are awakened to guide the child back to bed. Now, it's just a matter of deciding whether Dad or Mom will get up to retrieve the night-time traveler.

Sleeping on cactus

Thorny cactus has been turned into a resilient, shock-absorbent cushion by Queen City Tulatex Corp., Burlington, Vermont. The job is done by spraying the cactus fibers with a natural rubber latex, called Lotol, made by Naugatuck Chemical Div., U.S. Rubber Corp. The cushioning material is used in mattresses, upholstering, and is also serviceable as packaging material for shipping delicate instruments. One company is using the cactus cushioning in lawn chairs because the material won't mat down and is half the weight of usual filling materials.

Roadside lawn is sprayed on

Gullies along Connecticut highways are being avoided these days by a sprayed on beauty treatment. A pump mounted on a truck is used to spray a mixture of grass seed, water, fertilizer, and Monsanto Chemical Co.'s soil conditioner Bondite. The mixture can be sprayed 65 to 100 feet from the moving truck to cover an acre in 30 to 40 minutes.

1/3 ton of ice per worker

According to one engineer's calculations, air conditioning the average office is like givng every person in it a third of a ton of ice each day to keep him comfortable. (E. I. du Pont de Nemours & Co., Inc.) -

CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 16 August, 1953 No. 8

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EVERY TIME this big unloading bucket bites into a bargeload of coal, we're starting another chemical miracle on its way to you. Your new synthetic fiber suit, the drug that "knocked" your flu so fast and the bright enamel on your new car could all have been born in the coal chemical recovery mains of our coke ovens.

But *this* may be the real miracle: From our coking operations we produce not only coke and coal chemicals, but we follow through with basic products like pig iron and cement on one hand and finished chemical products like Pittsburgh Insecticides and Dyestuffs on the other—all in *one continuous, interlocking operation.* This highly developed integration—and it now embraces ten operating divisions—requires considerable engineering skill and years to perfect. But the payoff is the unusual production efficiency and product quality control that have become synonymous with Pittsburgh Coke & Chemical.

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In this Issue

We don't have a monopoly

It seems to us that there has of late been an unusually heavy amount of news developing about foreign processes which are being introduced into the United States. Not that we're unhappy about this. On the contrary, we have always been of the opinion that technology, as well as science, per se, belongs to no-one in particular and everyone in general. Certainly, we in this great country should realize that we do not have a complete monopoly of industrial achievement and know-how.

Of course, many processes and techniques now being used in other lands could not be economically justified for operation in the United States. For one thing, the high cost of labor over here would rule out a good number of possibilities. Other obvious considerations, such as raw material supplies and costs, finished product markets, utility costs and other items, may also tip the scale away from adoption of a process in the US.

CHEMICAL PROCESSING is following these developments for you, and we announce them as soon as we think we have enough information to justify a story. But we don't want to stop there. We want to (and will, where the field looks fertile) follow through on the development to its successful end—an installation in a plant in this country. Then, plant management willing, we can tell you—with facts and figures—just how good the process is, in terms of our competitive economy.

A quick sampling of our editorial columns for the last few months show that we have carried news on an Italian process for making alumina from clay, a French process for making urea and another for sulfuric acid from gypsum, and a Belgian technique of extracting oil from seeds with solvent. All timely reports.

So keep looking for foreign process and plant descriptions in our columns. We hope they supply you with ideas as to how *your* processes and products could be improved.

Dana B. Berg

ASSOCIATE EDITOR

editorial highlights

Hot HCl, wet Cl used in dye and detergent manufacture call for glass pipe 14

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2. If you are looking for information on specific products, use the Product Directory "Quicklocator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references 190

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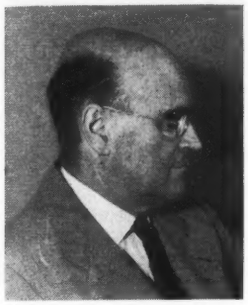
Engineered Maintenance

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

Mr. Henry W. Shockley, Maintenance Consultant, Engineering Dept., E. I. du Pont de Nemours & Co., Inc.



Received his Mechanical Engineering degree from Lehigh University in 1918 and accepted a position as Supervisor of mechanical installations aboard ship for the New York Shipbuilding Corp., Camden, N.J. until 1921. From 1921 to 1927 he was plant Engineer at the Alberene Stone Corp., Alberene, Virginia. In 1927 he joined du Pont and was placed in charge of plant engineering and maintenance supervision. He has worked as Maintenance Consultant for their Engineering Dept. since 1936.

IN THE past few years, economic considerations have forced industry to subject maintenance to a systematic analysis to determine what part it can play in reducing mill costs. Today, the maintenance role may be the difference between a profit or a loss. In the chemical industry, for instance, it is not unusual to have ratios of maintenance personnel to operating personnel in the order of 1 to 1, 1 to 2, or 1 to 3. This, alone, indicates that a maintenance organization must meet high standards in order to achieve its avowed objectives — 1) increase operating time and 2) reduce mill costs as well as operating costs.

Based on past practice, the maintenance organization of many plants was represented by one top man, who might be an engineer. Other supervisory levels were held by men from the ranks. There was no staff of specialists. Repairs were made as needed. In addition there was a strong central organization, composed mostly of crafts. Work was done as requested from the operating areas. Maintenance personnel were not always familiar with how the process equipment functioned. All of these factors contributed to: 1) frequent repairs to the same equipment, 2) little preventative maintenance practice, 3) loss of man-hours, and 4) frequent equipment down-time.

The advent of the engineer in the maintenance field was accompanied by a concentrated effort towards better maintenance control. The first innovation towards changing the maintenance organization was to divide the central operating groups into maintenance areas and shops. With the entrance of the engineer into lower levels of supervision, job improvement, inspection and overhaul schedules, repair order and backlog control, and many other factors entered the maintenance picture.

(*Continued on page* 181)

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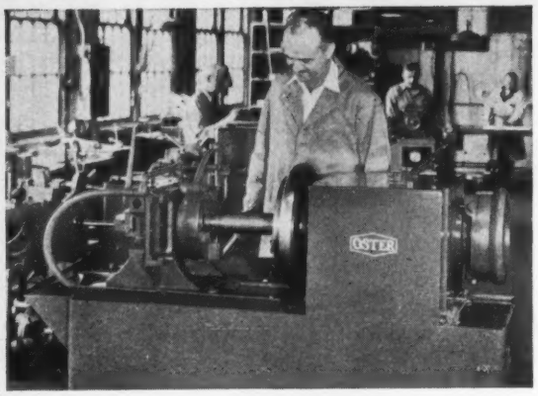

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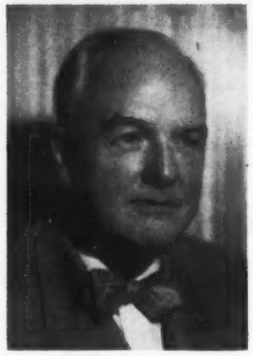


DR. WILLIAM R. COLLINGS

PIONEERS OF PROGRESS

There is a story — the writing of which has just begun — and it is akin to those eras of history labeled "the bronze age" and "the iron age." Dr. William R. Collings represents the combined talents of the Dow Corning group who have given us a new material to build with . . . and who have spurred new thinking with . . .

SILICONES—

A New Chemistry, A New Outlook

IN a citation (in 1946, when Case Institute conferred an honorary degree of Doctor of Science on Dr. William R. Collings, vice-president and general manager of Dow Corning) these words appeared ". . . high distinction in his career which has linked scientific research with creative industry." This linkage of research and creative industry is particularly prominent in the development of silicone products.

Dow Corning is spending $16 million on an expansion program for silicones — products that had not been produced commercially before eleven years ago. Silicones and silicone makers have come a long way in that time, but experts in this field agree that they have only scratched the surface of this new field of semi-inorganic chemistry.

Research on organo-silicon chemicals dates back a full century, but the usefulness of these chemicals as high polymeric materials stems from investigations started by Dr. J. Franklin Hyde in 1932. Hyde's work on silicones as high polymers was preceded by the classical study of organo-silicon monomers undertaken in 1900 by Dr. Frederic Stanley Kipping of University College in Nottingham, England. Using the Grignard reaction, Kipping tried to make organo-silicon compounds analogous to hydrocarbons in the form of acids, alcohols, ethers and ketones. He published more than fifty basic papers and produced hundreds of curious compounds, but very few of them behaved like their hydrocarbon analogs.

Hyde, by contrast, was working toward a definite, practical goal. As a member of the Corning Glass research team, he set out to find a material midway between glass and plastic. This "glastic" should be hard and heat resistant as well as flexible. He had a place for less highly polymerized material too. Corning was looking for a bonding and impregnating varnish that would be heat-stable enough to permit electrical engineers to make full use of fibrous glass cloth as an insulating material for electric motors.

With Hyde's work in progress, Corning set up another phase of research under Dr. Roy McGregor at Mellon Institute. General Electric was also working on silicone research at the time. At Dow, Dr. Edgar C. Britton was busy collaborating with Dr. Hyde. And other scientists, Dr. O. Kenneth Johannson of Corning and Dr. Earl Warrick at Mellon Institute were looking for a silicone gum with rubbery properties.

Dow Corning is born

By the late thirties, Hyde had something interesting to show — he had made high-polymer silicones. Corning invited engineers from General Electric and Westinghouse to look at these early silicone resins. They saw important commercial applications for such materials. Reasoning that chemicals were better a chemical company's baliwick, Corning president Glen Cole then approached the Dow Chemical Company as a natural partner. Dow produced tonnages of magnesium and chlorine — essential materials to the Grignard reaction used in the synthesis of silicones.

Dow Corning Corporation was not officially formed until 1943 when both companies set aside equal capital. Strangely, though, the Dow Corning organization was producing silicones commercially in 1942. One reason for this was the war. Uses of

silicones, secret then, included a moisture-proof, dielectric paste for sealing the terminals of aircraft ignition systems and electric motor insulation for navy ships. But another reason was surely the industrial know-how of Dr. William R. Collings and the young men he took with him from Dow's Cellulose Products Division to operate the tricky Grignard reaction on a plant-size scale.

Still another reason for the post-haste results of the new group must have been enthusiasm. It was early spring of 1942 when Dr. Willard Dow, Dr. William R. Veazey, and Dr. William R. Collings of Dow met with Glen Cole of Corning and Harold Boeschenstein of Owens-Corning Fiberglas. It appeared that the combination of Corning's research, work done by Dr. Britton of Dow, and Dow's technical experience could result in a product for high temperature varnish to be used with Fiberglas.

On that day the decision was made. Five months later the first Dow Corning products had been made and sold. The technicalities of drawing up a formal contract took a little longer. These were completed in February of 1943.

Silicone Whats and Whys

Silicones are long chain molecules. But they are neither so simple as hydrocarbons nor so complicated as proteins. And they are chiefly remarkable in having silicon atoms alternate with oxygen atoms in the main chain. (The name silicone was originally the handy way of saying silicon ketone.)

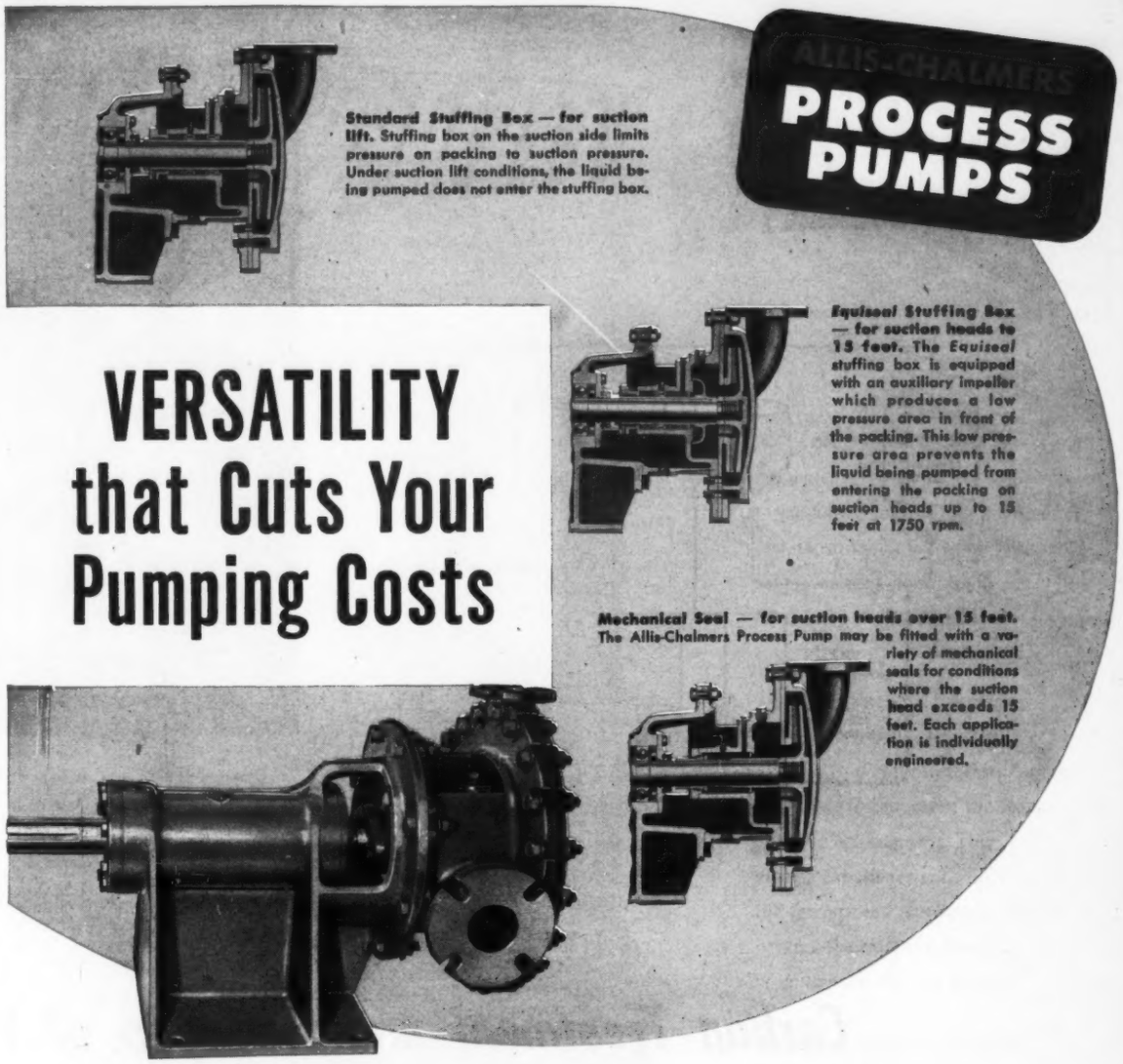
There is no simple physical description to go with this much simplified chemical definition, however. Silicones exist in forms from watery liquids at one extreme to hard, dense solids at the other.

Dow Corning 4 Compound, to pick a middle weight example, is an innocent-looking material you might mistake for petroleum jelly. It's colorless, water-repellent, and greasy to feel. It has the surprising quality of staying just that way at temperatures from −40 to 400° Fahrenheit. Dow Corning 4 was developed for the Army Air Force as the result of an idea Dow Corning's Dr. Shailer L. Bass got while sitting in on a conference on aircraft problems.

Specifically, the Air Force wanted something to cover sparkplug terminals. High-flying planes got up where the air was so thin that electrical leakage and corona discharge caused engine failure. The new silicone compound kept the ignition systems of many high altitude bombers and carrier-based planes from shorting-out. And, since the American GI is a genius at adapting things, Dow Corning 4 Compound found its way into radar and radios as well as the tops and soles of boots. This material accounted for three-fourths of silicone production during the war.

Other silicones solved the electric motor insulation problem. Glass fibers had already pointed the way to an insulation that would withstand the heat generated in overloaded motors. But silicones were the only type of heat-stable varnishes that could be used with the glass to make a moisture-proof insulating jacket. First motors to use the silicone-glass

(*Continued on page* 184)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ALLIS-CHALMERS

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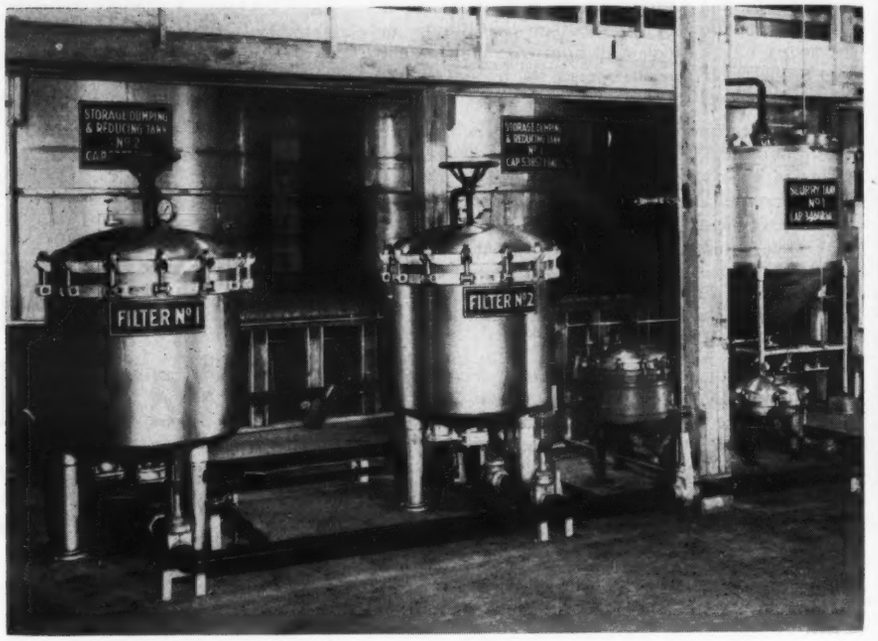
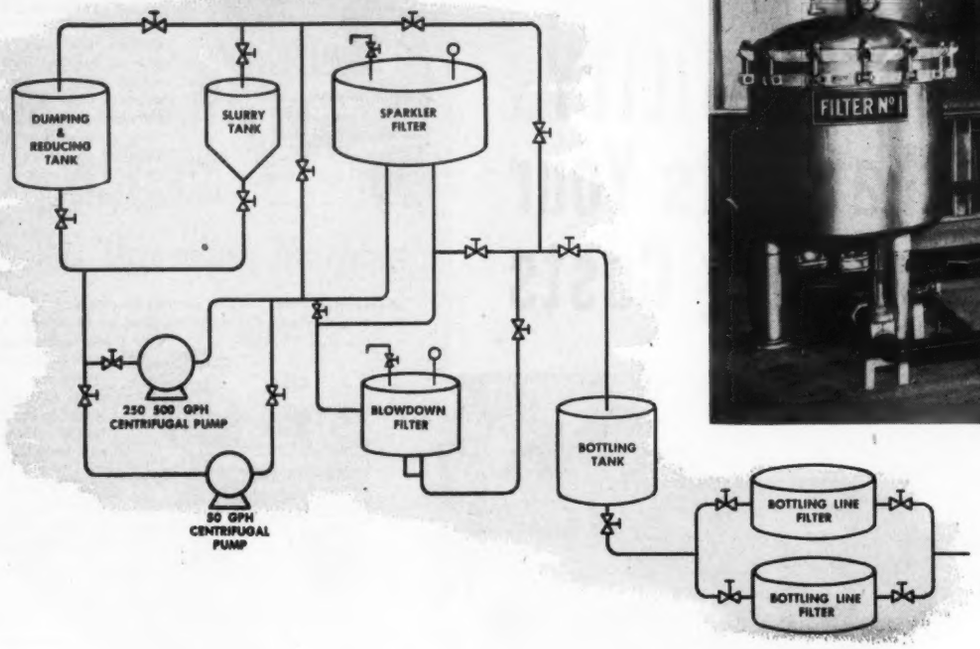


View of National Distillers Louisville filtration facilities. Blowdown filter and its scavenger plate are to right of filter No. 2



Simplified layout of whiskey filtration system

Carbon Treatment and Filtration of Whiskey Assure Sparkling Clear Product

Hill & Hill uses method to prevent unsightly cloudiness that usually develops when whiskey is chilled

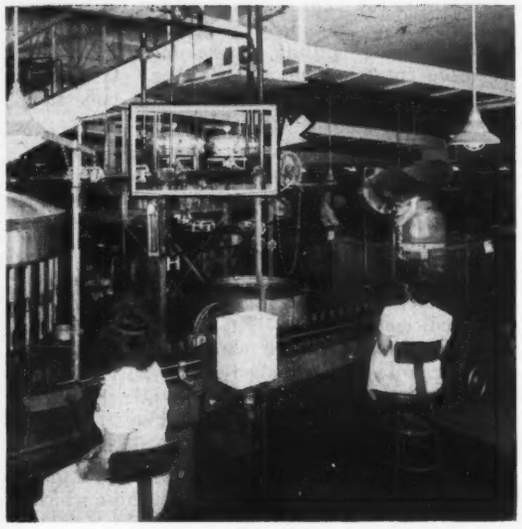
PROBLEM: When National Distillers Products Corporation in Louisville, Ky., started carbon treatment of Hill & Hill whiskey before bottling — as an attack on low-temperature floc formation — they found that existing filtration methods were inadequate for efficient and uniform removal of the activated carbon and other particles after treatment. New methods, utilizing filter aids, had to be adopted for filtering the whiskey between storage and reduction tanks and the bottling step.

Chief factors causing low-temperature cloudiness are natural colloids in the whiskey, which tend to precipitate out when the temperature falls.

Although this cloudiness is not detrimental to flavor or odor, it does of course affect appearance. Activated carbon treatment plus filtration reduces the colloidal material so that tendency to cloud is less and so that clouded whiskey will clear up quicker after warming up to room temperature.

Solution: The filtration system which was put in at the distillery is shown in the simplified drawing. Filters are all horizontal plate, pressure type. Piping arrangement shown permits simple precoating using either whiskey or water as the liquid carrying the filter aid precoat. Whiskey is usually used because of the convenience.

Prior to precoating, whiskey in the dumping and reducing tank is treated with Columbia "P" 200-mesh activated carbon, at a ratio of 1.06 lb per 1000 wine gal. After at least 30 minutes of gentle agitation, and just before the start of filtration, Hyflo Super-cel (1.06 lb per 1000 wine gal) is added to the tank.



Bottling line at National Distillers. Small filters (outlined) assure final clarity of activated carbon treated whiskey before it is bottled

In the meantime, the main 33" 19-plate filter and the small 8-plate blowdown filter, both using Feon 162/w Dynel cloths, are precoated. Main filter and slurry tank are filled with whiskey, and precoat mixture of 3.3 lb Cellu-Flo 8 and 1.7 lb Hyflo Super-cel per 100 sq ft filter area is added to the tank. The precoat is put on by recycling through the filter until whiskey is clear. Then a second precoat of 7.4 lb Hyflo Super-cel per 100 sq ft is applied in like manner.

Blowdown filter is precoated separately, but in the same manner, using same proportion of filter aid to filtering area. No second coat is required on this unit, however.

All whiskey used in the precoating operations is returned to the dumping and reducing tank.

Filtration now begins from the dumping and reducing tank, but whiskey is recycled until a nephelometer reading indicates a clarity of less than 5.0 nephelos (preferably below 4.0). When this clarity is reached, the whiskey is sent directly to the bottling tank from the filter.

After dumping and reducing tank has been emptied, filtered whiskey remaining in lines between filter and bottling tank is blown to bottling tank through a small auxiliary line. Unfiltered whiskey remaining in filter and lines ahead of it is returned to slurry tank and then filtered through the blowdown filter (which has a scavenger plate). When clarity is 5.0 nephelos or less, this filtered whiskey is pumped to bottling tank; up till then the filtered whiskey is recycled.

The bottling line filters ahead of the bottling machines customarily use Dynel cloth and Sparkler

(*Continued on next page*)

VERSATILITY

√ DESIGN
√ ENGINEERING
√ FABRICATION

STEEL
Crystallizers, 10' 3" High.
Specially Designed, with cooling Coils.
STAINLESS STEEL
Reaction Vessel, 10' 0" Dia., with Special Coils and Bubble Cap Section. One of four Units.
ALUMINUM
Pressure Vessel, A.S.M.E. Code Construction.
COPPER
Distillation Unit, containing Perforated and Bubble Cap Trays.

When purchasing new processing equipment, important economies are to be gained from working with one versatile source. Acme experience in engineering, design and fabrication makes possible this concentration of responsibility.

The illustrations on this page, representing just a few from thousands of successful installations, give some indication of the scope of Acme achievement. This diverse experience with all the ferrous and non-ferrous metals assures the skillful fabrication of equipment for any purpose.

When planning a replacement or expansion program, consult Acme first!

ACME Processing Equipment
ACME COPPERSMITHING & MACHINE CO., ORELAND, PA.
DESIGN AND FABRICATION IN ALL FERROUS AND NON-FERROUS METALS.

When inquiring check CP 2697 on handy form, pgs. 2-3

Dependable Source for Chemical Raw Materials

FELS . . .

a fine familiar name in SOAPS since 1876.

HAROLD G. PILE

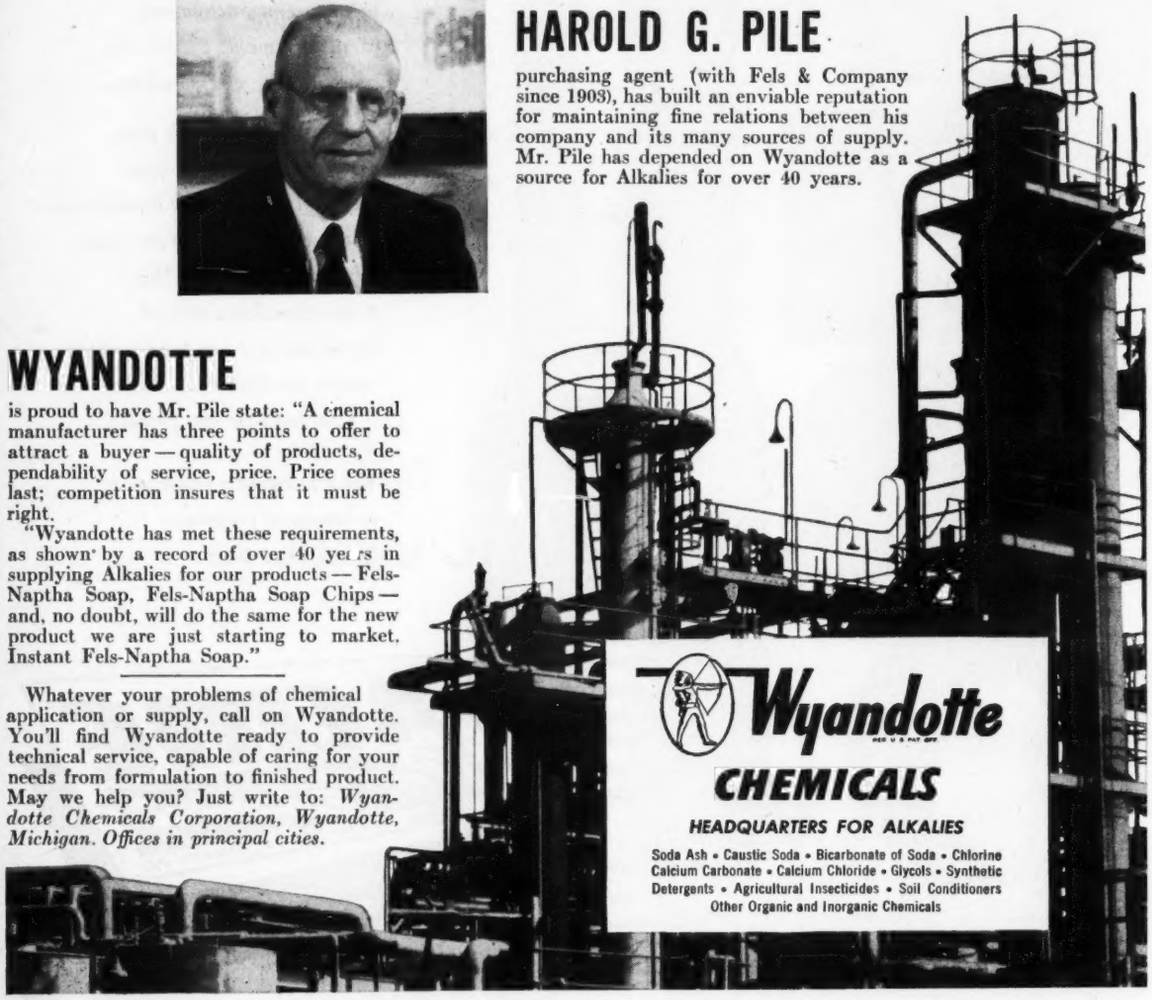
purchasing agent (with Fels & Company since 1903), has built an enviable reputation for maintaining fine relations between his company and its many sources of supply. Mr. Pile has depended on Wyandotte as a source for Alkalies for over 40 years.

WYANDOTTE

is proud to have Mr. Pile state: "A chemical manufacturer has three points to offer to attract a buyer — quality of products, dependability of service, price. Price comes last; competition insures that it must be right.

"Wyandotte has met these requirements, as shown by a record of over 40 years in supplying Alkalies for our products — Fels-Naptha Soap, Fels-Naptha Soap Chips — and, no doubt, will do the same for the new product we are just starting to market, Instant Fels-Naptha Soap."

Whatever your problems of chemical application or supply, call on Wyandotte. You'll find Wyandotte ready to provide technical service, capable of caring for your needs from formulation to finished product. May we help you? Just write to: *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*


Wyandotte
CHEMICALS
HEADQUARTERS FOR ALKALIES
Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Calcium Carbonate • Calcium Chloride • Glycols • Synthetic
Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals

When inquiring check CP 2698 on handy form, pgs. 2-3

(*Continued from preceding page*)

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When there are indications that small amounts of activated carbon have slipped through the bulk filtration, it is considered advisable to insert Republic Seitz K-7 or Cellulo 65 pads in the bottling line filters, to remove the fine material.

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Where flow volume is exceptionally high, interchangeable plate cartridges are available so that quick replacement of dirty plates with those which have been cleaned is possible.

(Filters supplied by Sparkler Manufacturing Co., Dept. CP, Mundelein, Ill. . . . or for more information check CP 2699 on handy form, pgs. 2-3.)

76% of ammonium carbamate converted to urea in pass through process . . .

overall ammonia efficiency of low-corrosion recycle plant is 97%; power needs are in line

A few details of the urea synthesis process developed by Chemical Construction Corporation, and used in the plant they designed for Sumitomo Chemical Company of Japan, have been released. Process uses complete recycle, and gets 76% conversion of ammonium carbamate to urea per pass — at least 70% more than that of other processes now available commercially, it is stated. Overall ammonia efficiency is 97%, and power consumption is said to be no more than with competing processes.

Other reported advantages include low corrosion and simple and efficient recirculation of ammonia. Ammonia recovery involves about one-half the amount of carbamate customary in other processes. A unique granulator with a special spraying device provides uniform spherical pellets with only minor recirculation of off-size product.

Excess ammonia is separated from the autoclave product as a gas, condensed without compression, and recycled by pumping. Unconverted carbamate is decomposed, and the ammonia-carbon dioxide gas mixture obtained therefrom is separated to recover ammonia gas for recycle.

(Announced through Chemico's parent firm, American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 2700 on handy form, pages 2 & 3.)

NEW SOLUTIONS

Cresylic acid production speeded by higher filtration rates

Problem: Pure cresylic acid is made from sodium cresylate, a caustic solution which contains mixtures of phenols, cresols and xylenols, among other impurities. The pure acid is made from this refinery effluent by a series of steps which include filtration, sulfuric acid treatment, distillation.

Filtration rate of the cresylate depends much on the feed stock, i.e., the refinery supplying it. Usually the stock contains 0.3 to 5% emulsified disulfide oils stabilized by the presence of about 1% finely divided solids, probably resins, iron sulfide, and carbon. In some cases, filtration is extremely slow because of the fineness of the solids present in the feed stock, and of the precipitates formed in the course of treatment.

Solution: One plant of the Merichem Company is assuring good filtration rates by the use of asbestos-containing precoats, a body addition of 0.1% carbon (as a slurry) while filtering, and a "self-cleaning" pressure leaf filter.

Various combinations of asbestos, wood cellulose, and carbon have been used as precoat material. Precoat of 0.40 oz/sq ft asbestos and 0.40 oz/sq ft BNB 40 Solkafloc proved satisfactory. BW 100 Solkafloc reduced filter rates, however. Bone char fines proved to be too heavy and settled out.

The filter is not opened for cleaning; cake is sluiced off by an internal water-spray, preferably hot. Cleaning takes 20 to 45 minutes.

Results: Average filtration rate has been surprisingly high: 2.5 gal/sq ft/hr. Rate has gone as high as 3.6 gal/sq ft/hr. With the 0.1% body addition, filter has been able to handle 10,000 gal between cleanings. At 2.5 gal/sq ft/hr, this means 20 hr of operation between cleanings (filter has 200 sq ft of filter area).

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For more information on product at right, specify CP 2702 . . . see information request blank between pages 2 - 3.

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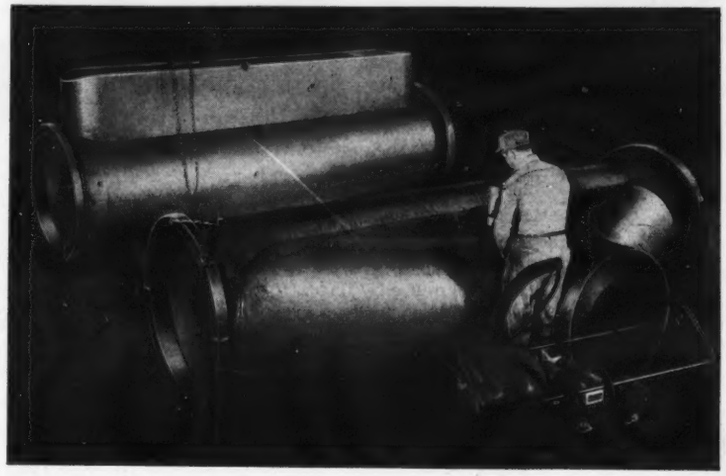

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When completed, the 44-inch shells will contain 16-foot admiralty tubes on a 1¼" square pitch. Tube sheets will be of naval brass as will the tube supports. Remainder of these two-stage condensing units will be made of carbon steel.

FABRICATED PRODUCTS DIVISION

M. W. KELLOGG

PULLMAN

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FELS . . .

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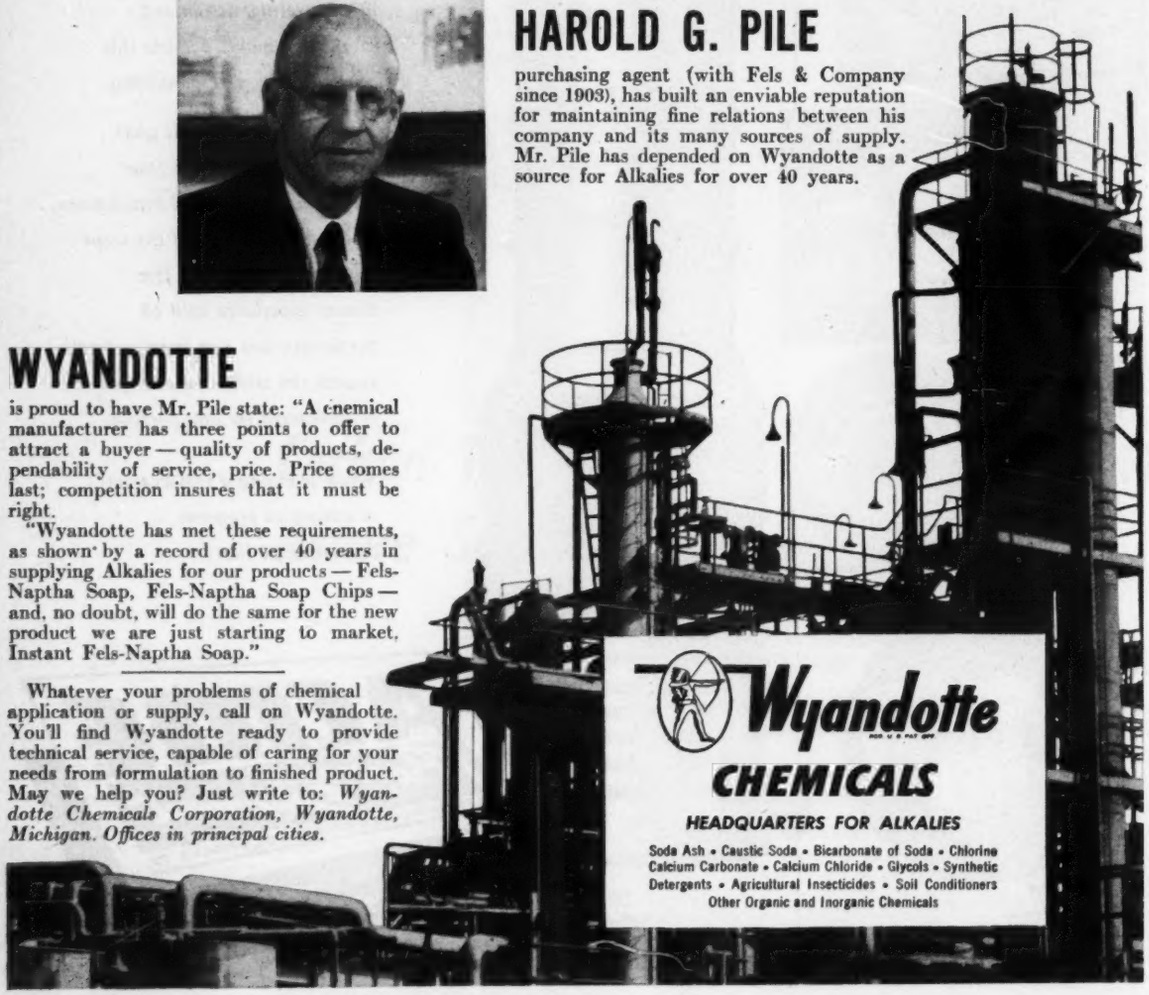
Wyandotte
CHEMICALS
HEADQUARTERS FOR ALKALIES
Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
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M. W. KELLOGG

KELLOGG PULLMAN

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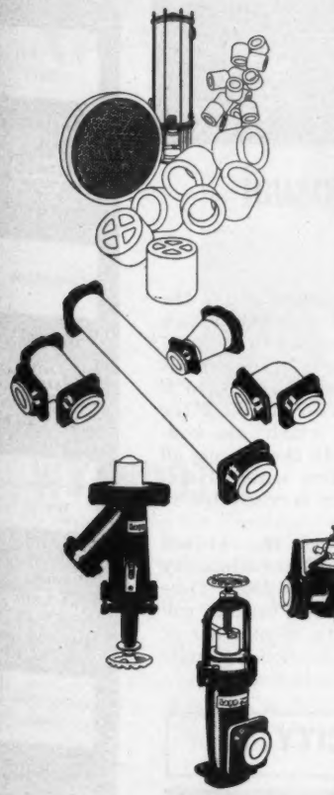
Nothing defies corrosion like

PORCELAIN

Chemical inertness to acids of all concentrations is a characteristic of porcelain. And, as made by Lapp, it is pure, dense, hard, close-grained, homogeneous and *non-porous*. This means there can be no penetration of Lapp Porcelain—no crumbling from capillary pressures—no absorption of liquids to contaminate later processing.

Valves, pipe, towers, and special shapes of Lapp Chemical Porcelain are operating with almost unlimited service in hundreds of installations where "no other material would ever handle the corrosion problem." At cost figures that sets records for economy, too. For Lapp Chemical Porcelain equipment costs but a fraction of that for special alloy and lined equipment—and quickly makes up, in reduced maintenance and elimination of need for replacement, the difference in its initial cost over that of cheaper "corrosion resistant" materials. Security and safety of plant and personnel haven't been overlooked. With TUFCLAD (fiberglass-reinforced Epoxide resin armor) Lapp Chemical Porcelain is protected against accident or carelessness. It will hold operating pressures against gross leakage, even though damaged by impact, thermal shock, explosion or fire.



ANGLE AND Y-VALVES ½" TO 6"
PLUG COCKS 1", 1½", 2"
FLUSH VALVES FOR 3", 4", 5"
TANK OUTLETS
PIPE AND FITTINGS ½" TO 8"
TOWERS 12", 18", 24"
RASCHIG RINGS ⅜" TO 3"
TOWER PLATES

WRITE *for Bulletin describing characteristics of Lapp Chemical Porcelain, and listing Lapp valves, plug cocks, safety valves, flush valves, pipe, fittings, towers, raschig rings and other equipment. Lapp Insulator Co., Inc., Process Equipment Division, 162 Wendell St., Le Roy, N. Y.*

Lapp
CHEMICAL
PORCELAIN

When inquiring check CP 2703 on handy form, pgs. 2-3

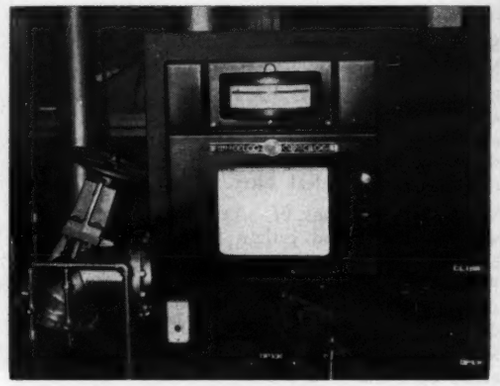
NEW SOLUTIONS of processing problems

Oil and paint manufacturer is able to push kettles harder with safety . . .

instruments up oil-bodying efficiency safely and maintain a constant high quality

Problem: Pratt & Lambert, Incorporated, buy linseed and soybean oil in tank car quantities. They body these oils into three grades by means of controlling cooking time and temperature in thee Blaw-Knox stainless steel kettles (two-3000 gallon and one-1000 gallon). Naturally, while they were interested in making most efficient use of this processing equipment, they also had to maintain quality. If temperatures rose too high above the 600°F set point, oils could be spoiled or the kettles themselves might be damaged. On the other hand, heating failure could result in product loss which would tie up following operations in the plant.

Solution: They decided that correct batch cooking time could be regulated only if exact shell temperatures were known. A system of checking,

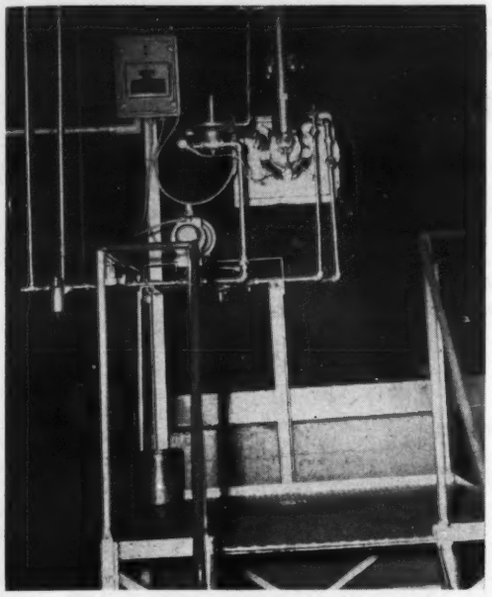


Recorder-controller in foreground is connected with three stainless steel kettles

recording, and controlling temperatures was therefore decided on for their Buffalo, New York plant. System they installed provided a permanent record for each kettle. A limit device was incorporated for warning the operator if set temperatures were exceeded. It was found that all these specifications could be met in a Multipoint Capacilog recorder. Recorder used in this application gives a permanent record of six temperature points on one chart. Recording of temperatures at two different points of each kettle allowed a better picture of the processing operation. Bare chromel-alumel thermocouples were welded to two points on each of the three stainless steel shells. These couples can set temperatures up to 1100°F.

Temperatures are recorded as a series of diamond-shaped points for each kettle and identified with a printed number. This printing is done by a motor-driven device which consists of synchronized printing wheel and indexing mechanism with a selector switch. A limit switch included in the model sounds an alarm when the set temperature is exceeded.

In order to take care of the danger of flame failure, an electronic control was installed. This instrument (Flame-otrol) monitors the flame from each



Combustion safety is provided by this device

of the oil burners supplying heat. Electronic in operation, instrument makes resistance of the oil flame a part of monitoring circuit while flame stays within a range of spectral and luminous characteristics. These are sensed and introduced by a Flame-eye. If the resistance does not remain within definite limits, instrument detects an unsafe condition and opens the input circuit causing the fuel supply to be shut off. In case of part failure such as a shorted connecting cable, a grounded sensing element, etc, system shuts off automatically.

Results: Pratt & Lambert are maintaining complete control of their oil bodying process. Accuracy of the instrumentation has made it easier to maintain product uniformity with assurance of combustion safety. Furthermore, since only a combustion condition which constitutes actual danger will cause a shut-off, more constant heat can be maintained with safety to equipment and personnel. Maximum efficiency and longer kettle life are now a fact because of this instrumentation.

(Model 7461 Multipoint Capacilog Recorder and Model 1301 Flame-otrols are both products of Wheelco Instrument Div., Barber-Colman Co., Dept. CP, Rockford, Ill. . . . . or for more information check CP 2704 on form, pages 2 and 3.)

See P & E Data Section
on pages 168, 170, 172, 174

Basic design simplicity of the *exclusive* Milton Roy liquid end step-valve assures high and reproducible volumetric efficiency. Self-cleaning *double* ball-checks spin any lodged particle free, are non-clogging, seat positively.

One-Half of One Per Cent Accuracy with this Milton Roy Pump

CONTROLLED VOLUME PUMPING

INSTRUMENTATION

PROCESS CONTROL SYSTEMS

BLENDING AND FORMULATING

On The Job in a leading processing plant, two of these air-powered controlled volume pumps meter deionized water solution from a chemical proportioning system to a key production process. Data obtained from *one full year* of operation showed a pumping accuracy within ½ of one per cent!

This is a typical Milton Roy Pump—one of many types of air-powered or motor-driven positive displacement pumps—in daily use in hundreds of similar operations. In *chemical processing*, for example, they're used in fermentation, pH control, hydrogenation of fatty acids. In the *textile and paper fields*, for resin impregnations, peroxide saturates, finish liquors. In *metals and mining*, for plating solution recovery, ore flotation, diatomaceous earth slurry handling. Wide as industry itself, the application of these pumps gives dollar savings not only in accuracy, but in longer service life and man-hours saved. These pumps meter practically any liquid in capacities from 3 milliliters per *hour* to 45 gallons per *minute* against pressures ranging to 25,000 pounds per square inch. They are available as single or multiple units, or as component parts of complete chemical feed and control systems.

***Bulletin No. 351** gives you facts on Milton Roy **Air-Powered Controlled Volume Pumps** and their application. Write, **now**, for your **free** copy.*

MILTON Roy COMPANY

Manufacturing Engineers • 1284 E. MERMAID LANE • PHILA. 18, PA.

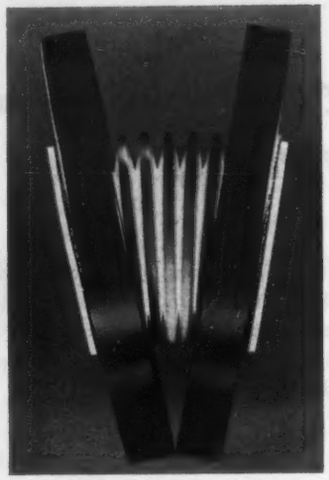
CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

Engineering Representatives in the United States, Canada, Mexico, Europe, Asia, South America and Africa.

When inquiring check CP 2705 on handy form, pgs. 2-3

IF YOU HAVE ANY OF THESE
PIPING PROBLEMS
● MISALIGNMENT ● EXPANSION
● CONTRACTION ● VIBRATION

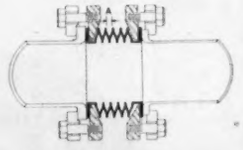
You Need "TEFLON"
Bellows Molded by Doré



Utilizing the highest technical skill and most modern facilities, we are molding "TEFLON" Bellows of uniform density and close wall tolerances. And, to insure quality and precision of the finished product, every Doré Style E-8 Bellows is rigidly tested and inspected prior to shipment.

Our "TEFLON" Bellows are inert to a wide range of commodities. They are built for 25 lb. W.P. and are available in sizes 1" through 12" diameters. The flanged-to-flanged relaxed dimension ranges from 2 inches to 5 inches. Additional sections in the Bellows will increase the length to compensate for greater flange-to-flange distances. Immediate delivery is made on both standard and special sizes of Bellows. When ordering, specify pipe size and flange-to-flange dimension.

Do business with Dore' for "TEFLON" sheets, rods, tubes, packing sets, gaskets, tapes and special molded shapes. Order your standard or special molded "TEFLON" Shapes from Dore'.



John L. Dore', Co.

SALES AGENTS IN U.S.A. FOR JOHN L. DORE', INC.
MOLDERS OF "TEFLON" AND "KEL-F" SHAPES
P. O. BOX 6002 ● HOUSTON 6, TEXAS

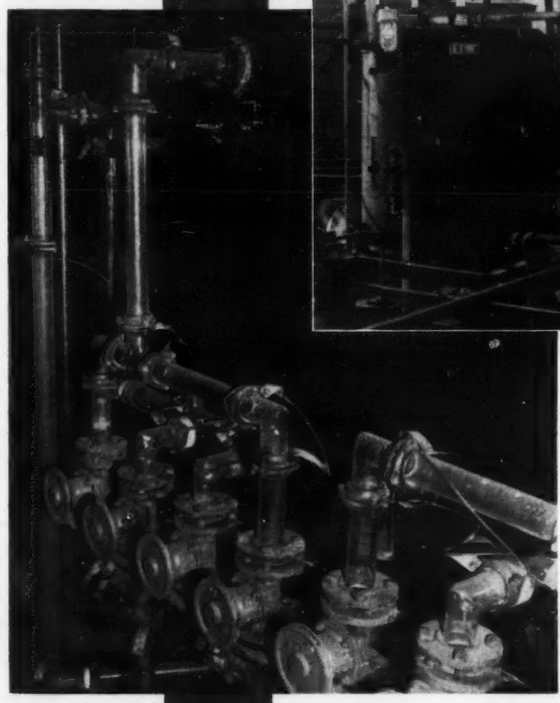
When inquiring check CP 2706 on handy form, pgs. 2-3

new solutions of processing problems

Hot HCl, wet Cl used in dye and detergent manufacture call for glass pipe

National Aniline's maintenance department set up to do most of its own fabrication

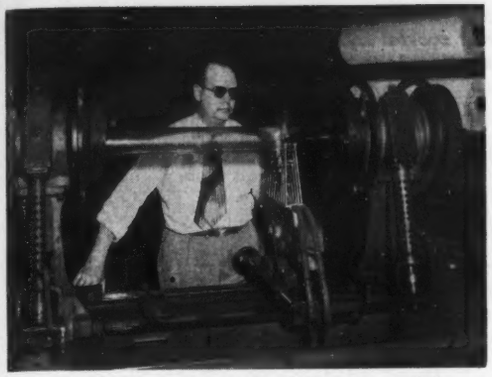
Typical outdoor installation of glass pipe carrying liquid and vapors



Detail of glass piping manifold using diaphragm valves. Note grounding of flanges

WET chlorine and muriatic acid present plenty of corrosion problems, especially when hot . . . but add to this small amounts of organic solvents and things get much tougher. Trouble is that many of the trace solvents dissolve plastic pipe, which otherwise might be highly satisfactory for the job.

When National Aniline Division, Allied Chemical & Dye Corporation, Buffalo, N. Y., run into something like this, they often turn to Pyrex glass pipe. Over the last 15 years or so, they have added or substituted glass pipe for carrying fumes to scrubbers, in acid recovery systems, as local transfer lines (within an operat-



Preparing to join two lengths of glass pipe on lathe

ing unit), and other places, until they now have close to two miles of the pipe throughout the plant. Most of this is in the vat dye and detergent (Nacconol and Swerl) production depts. Since so many products are made in so many ways, using so many reagents and reactions, National Aniline engineers must keep on their toes concerning materials of construction. Of course, steel is used wherever conditions permit. But when experience indicates that steel or stainless steel or alloy can't be used (because it might corrode or impair product quality), they turn to other materials. Glass is often the one selected, because of its resistance to acids and solvents.

The plant's maintenance department has come to look upon glass pipe as a common material of construction, instead of a special case which must be given special treatment. Glass pipe is surprisingly strong, but to be "extra-safe" continuous supports are installed under extended horizontal runs. It is a strict rule that metal flanges connecting lengths of pipe must be grounded to prevent dangerous build-up of an electrical charge within the flowing liquid or gas. In addition, safeguards against mechanical damage are used.

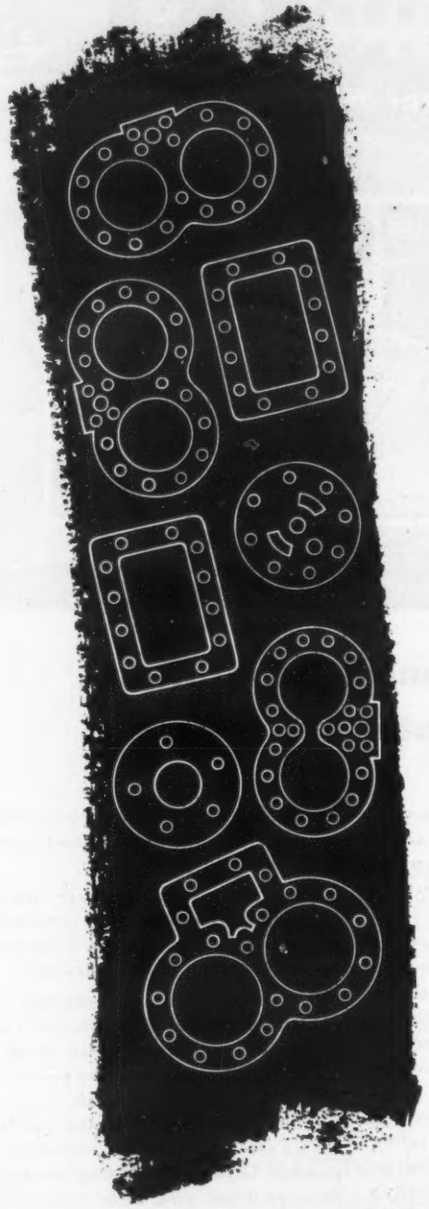
After World War II, the engineering department undertook the task of arranging for much of the fabrication of the pipe. Most of the work (about 80%) consists of joining straight lengths together, but lines are also pierced and side branches are put in. A maintenance man who showed interest in working with glass pipe was given further training along that line — including some study at Corning Glass Works and some with National Aniline's laboratory glass blower.

A room is set aside for working glass pipe. It contains glass lathe for sealing lengths of pipe to each other, an electric annealer and an annealing oven. Pipe diam of 1, 1½, 2, 3, and 4" are handled. Hot-wire method is used for breaking pipe. Annealing is checked polarigraphically.

For general acid service, where solvents are not involved, a dense asbestos type gasket is used. A Teflon envelope gasket with a rubber core is employed when solvents will contact it.

(Pyrex glass and fittings are made by Corning Glass Works, Dept. CP, Corning, N. Y. . . . or check CP 2707 on form, pages 2 and 3.)

GASKETS...



• THAT PUT AN END TO CORROSION PROBLEMS

If you're looking for a gasket that's highly resistant to acids, alkalies, oils, and greases — or that's lightweight, strong and resilient — or that's non-toxic and non-contaminating — or that's impermeable — or that's abrasion-resistant — or that's non-oxidizing — then stop, right now! For gaskets made of the versatile plastic, TYGON, are the answer to your problem.

Corrosion-resistant, tough, and long-lasting, TYGON Gaskets are extensively used in a wide variety of chemical, food, beverage, and general industrial equipment — wherever sure, safe seals are wanted and needed.

• THAT CAN BE DIE-CUT, MOLDED, OR EXTRUDED

You can stop wondering too, as to whether TYGON will fit your particular application, for "versatility" is TYGON's other name. First of all, TYGON for gasketing is available in a number of standard formulations, translucent or glossy black, which exhibit a wide range of physical, electrical, and chemical properties. Secondly, the excellent workability of TYGON permits it to be die-cut from press-polished or calendered sheets; to be molded to exact specifications; or to be extruded as tubing, solid cord, or channel in continuous lengths. Finally, where the volume warrants, we can develop special compounds for the very unusual applications.

Why not write today for further information and engineering assistance on TYGON Gasketing? Ask also about TYGON Tubing, TYGON Paint, and TYGON Tank Linings — other forms of this versatile plastic that may also help you.

TYGON
THE VERSATILE CORROSION-RESISTANT PLASTIC

U. S. STONEWARE

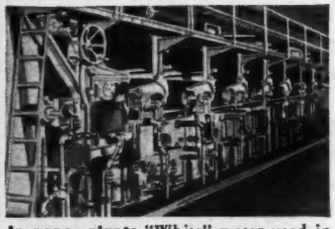
AKRON 9, OHIO

250-C

PLASTICS AND SYNTHETICS DIVISION

When inquiring check CP 2708 on handy form, pgs. 2-3

CELITE FILTRATION removes harmful impurities and purifies water for re-use



In paper plants "White" water used in paper formation is purified for re-use by Celite Filtration. The Celite method can also provide clean pure process water in many other industrial uses—for boiler make-up, heat exchangers, circulating water for towers, etc.

In oil wells—output is boosted by re-pressurizing wells with water to force out accumulated oil. Celite Filtration purifies water to the extreme degree required—removes the minute suspended impurities which would otherwise clog the microscopic pores of sandstone.

CELITE* FILTRATION can reduce your process water costs materially—and it can greatly aid your community's water conservation and anti-pollution programs.

If your plant now discharges industrial water as waste, Celite Filtration enables you to purify this water for *re-use*—at relatively low cost. Celite removes all types of suspended solids. When required, it even filters out fine matter such as amoebae and algae, many of which cannot be removed by other methods. Thus, by recycling process water you can save on water costs . . . and save your community's water.

At such times as you still find it necessary to discharge process water, Celite Filtration is an important anti-polution measure. It helps make water safe and harmless . . . thereby protecting your community's recreational areas, fish and wildlife.

Food processors, beverage manufacturers, swimming pool operators and many industrial users of process water depend on Celite Filtration.

It will pay you to investigate the unique advantages of Celite for your particular application. Celite itself is carefully processed from the purest deposits of diatomaceous earth. It comes in nine standard grades, and you are always assured of utmost uniformity of product. To have a Celite engineer study your problem and offer recommendations, simply write Johns-Manville, Box 60, New York 16, New York. In Canada, 199 Bay Street, Toronto 1, Ontario. *T.M. Reg. U.S. Pat. Off.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville CELITE FILTER AIDS

When inquiring check CP 2709 on handy form, pgs. 2-3

Steel rolls of paint mill not scored by fine earth colors . . .

'jet-milled' pigments raise oil color production 50% as stone mills no longer mandatory

Problem: The abrasiveness of earth colors (burnt and raw sienna and umber, and Van Dyke brown) made it necessary for The O'Brien Corporation, South Bend, Ind., to mill paints and liquid oil colors containing them on tandem stone mills instead of the much faster steel roll mills. Frequent and costly resurfacing of the steel rolls would be the penalty if the latter were tried.

Solution: A little more than three years ago, O'Brien switched to the use of so-called "jet-milled" pigments whenever the formula called for these earth colors. The pigments, as supplied, have been ground in an adaptation of the fluid energy mill in which particles are ground by hitting against each other violently in a swift current of air (or in some cases, steam). Particles ground by such methods are very small in size (less than 10 microns and usually down around ½ micron), and are usually of smooth contour.

No problems were involved in adapting the pigments to the process, except for minor adjustment in some formulas to obtain the same paint colors as with the original types of pigments.

Results: Roll mills can now be used, with the result that production has been increased 50% in comparison to stone mill operation. O'Brien still uses the stone mill to catch some of the "overflow" production, but even when this is done they find that a batch can be put through in 25% less time when the jet-milled pigments are used.

("Jet-milled" pigments supplied by Mineral Pigments Corp., Dept. CP, Muirkirk, Md. . . . or reader may secure more information by checking CP 2710 on convenient Reader Service slip between pages two and three.)

Replace 6-hour test runs with continuous record of sulfur content . . .

recorder speeds evaluation work in pilot plant and provides data previously unavailable

Among the projects in progress at Chemical Construction Corporation's Linden, N. J. pilot plant is the tough one of scrubbing out organic sulfur compounds to 1 ppm or less from a gas. Special absorbent materials are being evaluated and the evaluation requires determining all forms of sulfur in tower feed and exit gas.

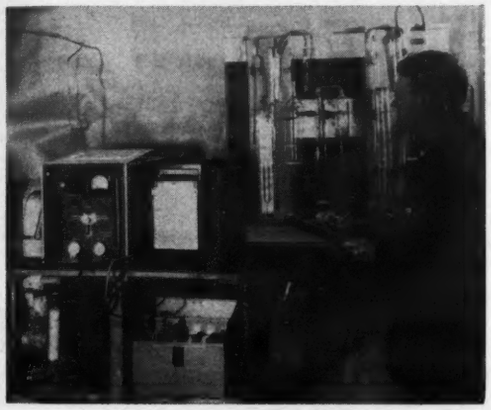
When this problem came up, sulfur analyses were made by a modification of the "referee" method. Based on burning the sample gas, this method took a relatively large sample. Since the tower was a small one and concentration was low, six hours were spent in collecting enough sample to make a test. Results of the test, of course, gave an average of the value over the six-hour sample period.

About a year ago, Chemical Construction investigated

the Titrilog continuous sulfur content recorder. After seeing the instrument in operation, they decided to lease one.

Basis of operation of the Titrilog is oxidation of sulfur in the sample. It has a threshold sensitivity of about 0.1 ppm sulfur in any oxidizable form. Gas sample is passed through reaction cell where free bromine oxidizes it. Electrodes in the cell constantly sense sufur-bromine (reduction-oxidation) balance and generate bromine as needed to maintain it constant. Actual measurement is the amount of current needed by an electrolytic cell which generates bromine to do this.

As set up at the plant, instrument is hooked into both inlet and outlet gas streams. Using automatic cycling, it records sulfur level in input for 15 minutes, switches to zero, then records sulfur level in exit stream for 15 minutes. This cycle is sufficiently short so that changes in absorbent material can be followed closely because absorbent life is long enough so that the half hour for a full cycle is a fraction of this life.



Continuous measuring instrument (left) with its recorder, and electrolytic cells replaces the glassware of former "referee" method for determining the amount of sulfur in gas streams

While the Titrilog can be used to determine various forms of sulfur (H_2S, mercaptan, SO_2) it is not being used this way at the Linden plant. The referee method is still used to determine a factor to correct for proportion of sulfur compounds.

By comparing the instrument's performance to their standard method, chemists at the plant judge its accuracy as 0.2 ppm sulfur on this job. This is about as close as they could get by their former method. But the importance of the instrument to them is the *continuous* measurement which they get. Not only has it permitted them to get one and one half times as much data in each working day, but the performance fluctuations of the tower and "breaking point" of the absorbent can be found with more certainty than before.

(Titrilog sulfur recorder is a product of Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 8, Calif. . . . check CP 2711 on handy form, pages 2 and 3.)

IT FLOATS ON THE LOAD! *

You turn on the steam.

This little stainless steel valve—the only moving part in the Yarway Impulse Steam Trap installed on the equipment—opens wide and *stays* open as the air and condensate continuously pour through.

The equipment reaches production temperature in the quickest possible time.

Production temperature reached, the little valve snaps shut. After that, by a pulsating action, it discharges all condensate as it forms—even a tiny teaspoonful. *There's hot steam in the equipment all the time* . . . steady, maximum temperatures are maintained.

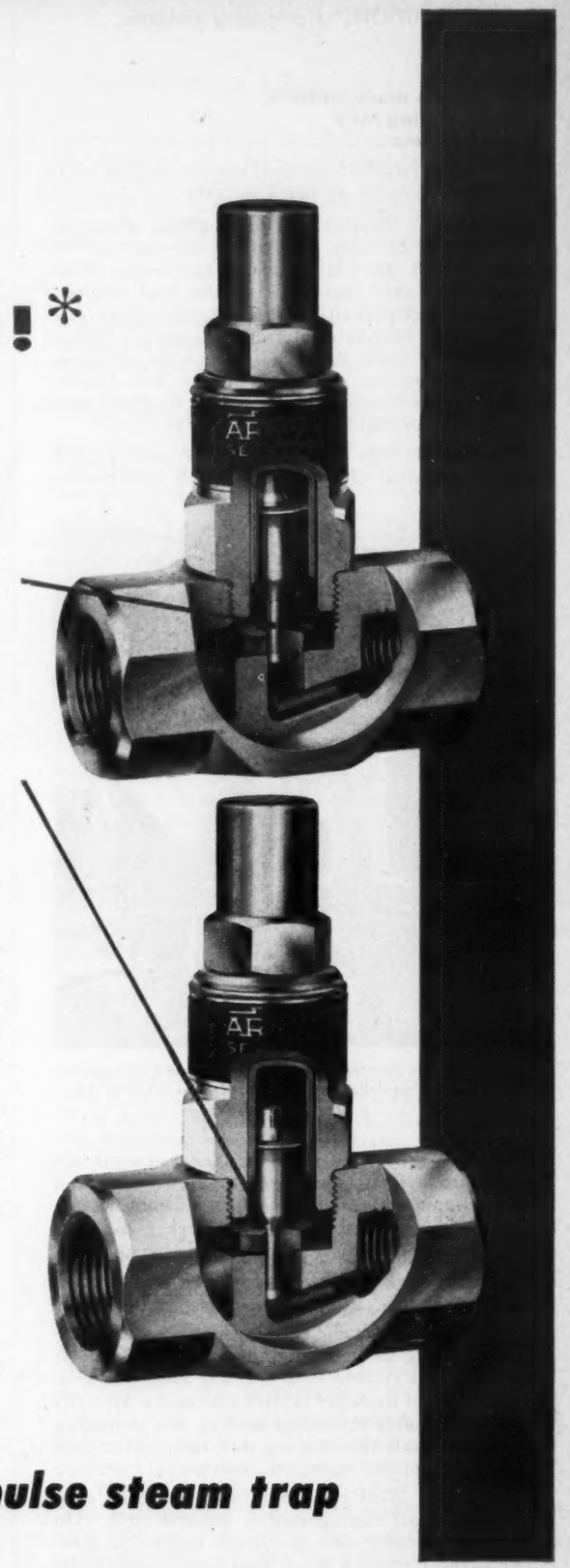
It all adds up—to more production per day.

Other profit-making features of the Yarway Impulse Steam Trap—low initial cost, easy installation, stainless steel construction, low maintenance, good for all pressures, quick delivery from over 200 local industrial distributors.

Try a Yarway—free for 60 days—and *prove* its advantage. Your distributor will supply you.

For free Yarway Impulse Steam Trap Bulletin T-1740, write . . .

YARNALL-WARING COMPANY
125 Mermaid Ave., Philadelphia 18, Pa.



* . . . *resulting in fast heat-up of equipment, more production per day.*

YARWAY | *impulse steam trap*

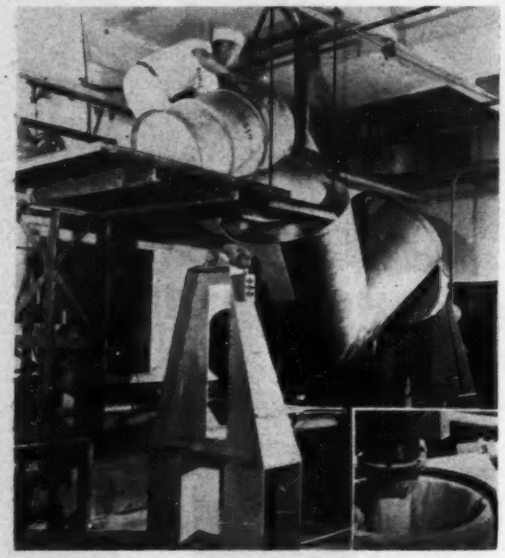
When inquiring check CP 2712 on handy form, pgs. 2-3

Drugs are more uniform, but blending time is 20% less . . .

easily cleaned twin-shell blender reduces labor requirements as much as 35%

Problem: Because the highly-potent active ingredient of Nitranol (R), a drug manufactured by the Wm. S. Merrell Company, Cincinnati, Ohio, represents only about 6% of the final product, thorough dispersion throughout the other components is essential. Merrell was using a ribbon type mixer to do the blending, but the operation proved slow and not as efficient as was desired. In addition, cleaning of the mixer involved some difficulty for the operators.

Solution: The blending is now accomplished in a twin-shell blender which holds about twice



Here's how twin-shell blender is loaded, and unloaded (inset). Specially designed hoods are utilized to prevent dust nuisance

the batch size of the ribbon mixer. Chemicals are lifted to a service platform by an elevator and they are subsequently emptied into the blender as shown in photograph.

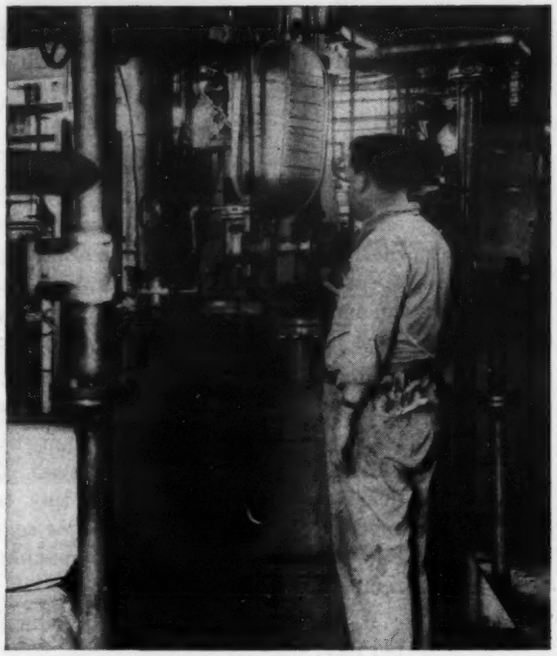
After blending, the mix is emptied through outlet at V-base of blender.

A dust control system (Kirk and Blum) prevents powdery dust from escaping into surrounding areas during filling and emptying operations. It consists of a cyclone separator, bag filter, and temperature and humidity control provisions. Specially designed hoods at blender loading and unloading positions draw the escaping dust into ducts which convey it to the collection system.

Results: Final product is more uniform, even though actual mixing time is reduced 20%. On certain products, such as capsule mixes and powders, the blender has cut man-hour requirements as much as 35%. Another big advantage is the

IN PROCESSING PLASTIC POWDERS AND RUBBER PRODUCTS

Dewey and Almy protects quality with S



REACTOR TANKS used in polymerization process at Dewey and Almy are lined with Stainless Steel. Stainless does not inhibit the reaction taking place in the tanks.

IMPELLERS AND SHAFTS in these pumps that circulate coagulant are Stainless Steel. The pumps were manufactured by The Duriron Company, Inc., Dayton, Ohio.

800-GALLON MIXING TANKS, lined with Stainless Steel, are used in preparation of a coagulant used in the Rubber Dip Department at Dewey and Almy Chemical Company. The tanks were made in 1945 by Hodge Boiler Works, East Boston, Mass.

Stainless Steel equipment

To the chemical industry, one of Stainless Steel's most important characteristics is its ability to handle many highly reactive products with no contaminating effect on them.

Dewey and Almy Chemical Company, Cambridge, Mass.—one of the leading developers and producers of chemicals based on the technology of small particle dispersion in water—uses Stainless Steel at several points in its production lines where the contamination possibility is very real.

In producing plastic powders, two large Stainless-lined, steam-and-water jacketed reactor tanks are used for polymerization of a monomer. Stainless Steel is practically a "must" here since other materials tend to inhibit the reaction. Freedom from corrosion and contamination, as well as ease of cleaning, are important benefits from Stainless, too.

Lines that serve these tanks, and their valves as well, are Stainless Steel. Stainless Steel's smooth surface eliminates the danger of clogging caused by a highly viscous material piling up around tiny surface projections.

In Dewey and Almy's Rubber Dip Department, forms for meteorological balloons are dipped into liquid rubber, which is contained in Stainless Steel vats. Before this process, forms are dipped into a coagulant liquid to promote affinity between the metal form and the latex.

The coagulant is mixed in Stainless-lined kettles with Stainless agitators. Here non-contaminating Stainless Steel helps prevent flaws in the product. Pumps which circulate the coagulant are also Stainless Steel.

Wherever you require freedom from product contamination, ease of cleaning, resistance to corrosion, long life and minimum maintenance, there you need Stainless Steel. And for finest performance, be sure your equipment fabricator always uses perfected, service-tested U·S·S Stainless Steel.

STAINLESS STEEL hopper carts in the copolymer drying area deliver powder into a Stainless Steel hooded funnel.

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · USS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL

ease with which the blender can be completely cleaned.

(Blender was supplied by Patterson-Kelley Co., Inc., Dept. CP, 346 Warren St., East Stroudsburg, Pa. . . . or for more information reader may simply check CP 2714 on handy Reader Service slip between pages two and three.)

Temperature is "secret" to successful post-forming of laminated plastics . . .

radiant or infrared heaters with temp-indicating crayons for control found effective

The "secret" of obtaining good results with the *post-forming process* (heating and bending of a laminated plastic sheet, such as Formica, to some desired curvature or radius) is contained in the use of correct heating technique and correctly built forming dies and fixtures.

Heating operation is the most important single operation in the post-forming process. If material has been heated satisfactorily, there should be no difficulty in forming it. The temperature range in which a laminated plastic can be successfully post-formed is relatively narrow. For this reason the rate of heating must be the same over the entire area of material that is to be formed.

Infrared lamp ovens and radiant heaters have been found most satisfactory and practical for this even heating operation. Oven temperature should be approximately 260°C (500°F). All paper and fabric post-forming grades of laminated sheet, Formica for example, will blister when heated to a temperature of 175-180°C (347-356°F). A very practical method of obtaining optimum forming in production is to use this constant blistering temperature to determine proper heating cycle. Time-temperature graphs indicate that this method will result in the material being heated very close to its optimum forming temperature of 165°C (329°F).

When using radiant heaters with decorative forming stock, a very effective way to obtain proper control of the heating cycle has been found . . . a 325°F Tempilstik temperature-indicating crayon can be used. The sanded back of the Formica sheet is marked with the Tempilstik and the Formica heated by the radiant heater. Within 30-45 seconds the crayon marking will melt, indicating that the Formica is at its optimum forming temperature.

Material is then placed immediately in the forming apparatus and formed immediately. Forming action should be complete within ten to fifteen seconds after the material has been removed from heating, otherwise the material might crack during forming and introduce new complexities.

(Copies of a 12-page report by the Formica Company and entitled "Post-Forming — General Information" are available from manufacturer of Tempilstiks, Tempil® Corporation, Dept. CP, 11 West 25th Street, New York 10, New York . . . or reader may secure more information by simply checking CP 2715 on convenient Reader Service slip between pages two and three.)

When inquiring check CP 2713 on handy form, pgs. 2-3

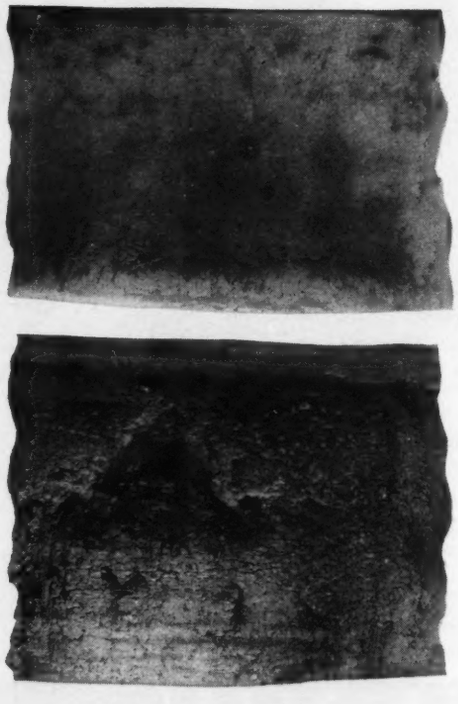
A brief account of a new polyester rubber (Chemigum-SL) was carried on page 60 of the March 1953 issue of CHEMICAL PROCESSING under the heading, "Synthetic rubber gets basic patents, may enable tires to outwear the automobile." Since that time, additional information on this interesting elastomer has been compiled and seems worthy of presentation at this time . . . the Editors.

Here's the Latest Information on Polyester Rubber

USES: Suggested applications include truck and automobile tire treads, shoe soles and heels, belting, floor coverings, and industrial products exposed to extreme wear. The polyester allows thinner and cooler-running treads on tires designed for high speed service in hot weather. Many applications exist for use as a coating for rubber and plastic articles to protect them against deterioration by oxidation and sunlight.

Features: Tests show that tire treads made from this polyester rubber give markedly better wear than treads of the best cold rubber currently produced. It is comparable to butyl rubber in gas diffusion properties and highly resistant to oil. Resistance to oxidation is found to be far superior to that of natural or GR-S synthetic rubber, being in a class with other saturated polymers such as butyl and acrylate rubbers.

Tensile strength is 50-100% better than any other rubber-like material. Outstanding toughness is evidenced by resistance to cutting. Cut growth resistance is high because subsequent oxidation is not a factor when the rubber is under stress.



Chemigum-SL polyester rubber sample (top) was subjected to 4600 repeated deformations; natural rubber sample (bottom) was subjected to 2455 similar deformations. Note the comparatively superior condition of the polyester rubber stock, pointing-up its toughness and good wearing qualities

Weather aging of the polyester is superior to that of standard diene type rubbers. Sunlight is said to have little deteriorating effect.

Description: Basic ingredients of Chemigum SL are ethylene glycol, propylene glycol, and adipic acid. The resultant chemical is the polyester base of the rubber. The molecular structure resembles an endless string of boxcars with couplings at each end interlocked with the next in the string. Similarity with the German's Vulcollan is noted, but Chemigum SL excels in processing advantages.

Polyester base is treated with diisocyanate, the amount determined by the "Reaction Factor". The "R" factor is the secret of the process, stopping the solidification reaction of the chemicals at the point where the resultant

Physical Properties of Storable Raw Gum

Specific Gravity	1.17
Softening Range, °F	284-365
Mooney (ML-4 @ 212°F)	50-100
Olsen Flow (212°F, 500 psi), sec/inch	120-200
Intrinsic Viscosity (dilute solution viscosity)	1.0-2.0
Molecular Weight	25,000-50,000
Percent Gel	0-10
Storage Without Hardening, months	6-12
Solubility as 20% Cements	ketones, esters, and chlorinated aliphatics

Physical Properties of Cured Gum

Density	1.2
Tensile, psi	4500-5700
300% Modulus	600-800
500% Modulus	1600-2000
Elongation, %	650-850
Shore A Hardness	60-95
Schopper Tear, psi	1000-2500
Useful Temperature Range, °F	−30 to +200
Rebound, −77°F	80
Rebound, 212°F	84
Hot Tensile, psi @ 200°F	2000-2800
Elongation @ 200°F, %	700-900
Road Wear Rating (Best cold rubber tread stock = 100)	200
Pierced Groove Flex	
Cold, min	>240
Hot, min	>170
Solvent Resistance (% swell @ 77°F after 2 days)	
Aliphatic (100%)	0.8
Aliphatic (60%) aromatic (40%)	14.9
Methyl ethyl ketone	170.0
Benzene	91.7
Water	0.9
HNO_3 (10%)	deteriorated
H_2SO_4 (conc)	dissolved
Aqueous NaOH	very soft
HCl (conc)	deteriorated
Oxygen Bomb Aging (6 days, 150 psi @ 125°F)	
Tensile, psi	5100
Elongation, %	780

Air Bomb Aging

	30 days @ 158°F	14 days @ 250°F	16 hrs @ 236°F
Tensile, psi	4700	500	3500
Elongation, %	685	580	775

material can be further processed on mills, calenders, extruders, and other conventional equipment.

When used in the fabrication of articles, Chemigum SL is given another diisocyanate treatment and then formed into final shape without the use of sulfur or accelerators for vulcanization. Carbon

(*Continued on next page*)

Now → TERGITOL Trade-Mark NON-IONIC

Surface-Active Agents

"TERGITOL" Dispersant NPX →

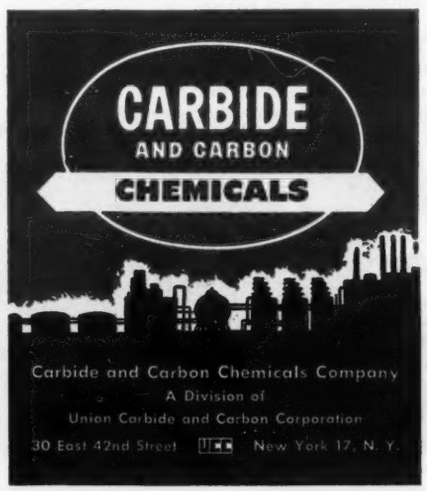
Excellent detergent with good sudsing properties. Outstanding emulsifier and dispersant. An alkyl phenyl ether of polyethylene glycol—clear, colorless liquid with mild, pleasant odor. Available in commercial quantities in both regular and anhydrous grades.

"TERGITOL" Wetting Agent TMN →

Extremely powerful wetting agent. Most effective in solutions containing low concentrations of dissolved solids. An alkyl ether of polyethylene glycol—clear, pale yellow liquid; mild odor. Available in commercial quantities.

"TERGITOL" Dispersant XC →

Low-foaming detergent with high emulsifying power. Compatible and stable over a wide range of rigorous processing conditions. An alkyl ether of polyalkylene glycols—pale, waxy solid; practically odorless. Available in commercial quantities as 100% active material.



Try these modifications of TERGITOL NPX for special problems—available in development quantities.

"TERGITOL" Dispersant NP-14 (oil-soluble)

"TERGITOL" Dispersant NP-27 (aromatic-soluble)

"TERGITOL" Dispersant NP-35 (water-soluble at high temperatures)

For samples, prices, or further information on any of these TERGITOL non-ionic surface-active agents, call or write our nearest office.

IN CANADA:
Carbide and Carbon Chemicals, Limited, Toronto

The term "Tergitol" is a registered trade-mark of Union Carbide and Carbon Corporation.

When inquiring check CP 2716 on handy form, pgs. 2-3

(*Continued from preceding page*)

black and other reinforcing agents may be used, although these are not necessary to toughen the rubber.

The accompanying tabulation sets forth some of the physical properties of the raw gum as well as cured gum.

(Chemigum-SL is a development of the Goodyear Tire and Rubber Company, Dept. CP, 1144 East Market Street, Akron 16, Ohio . . . or for more information check CP 2717, pages 2 and 3.)

Report on feathers, lubricants, mica, and material handling

Laboratory preparation of a base material for synthetic lubricants, and problems and future trends in development of synthetic lubricants are among technical advances presented in research reports reviewed in the April issue of *Technical Reports Newsletter* of the U.S. Dept. of Commerce.

Also discussed are reports describing: technical progress in the feather industry, and basic principles of low-cost materials handling.

Of particular interest to the electronics and instrument industries are reviews of reports on how to increase the supply of high-grade capacitor mica through electrical testing, application of an X-ray technique in manufacturing thin quartz crystals, beta-ray thickness gages, and simple meters for high intensity X-rays.

April, 1953 *Technical Reports Newsletter* is available from the Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C.

Dimensional stability of woolens held within 5% with resin finish

Woolens treated with Lanaset (a resin finishing aid) are reported to have shrinkage controlled within 5%, and are said to retain their "just bought" appearance and texture through washings or dry cleanings. The treatment minimizes loss of nap from woolens, cuts down pilling, and reduces matting and felting.

(Lanaset is a product of the Textile Resin Department of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York . . . check CP 2718 on form, pages 2 and 3.)

Information on a replacement for 18-8 grade steel

Four-page bulletin describes a straight chrome stainless steel which is said to do many of the jobs of restricted 18-8 grades. Advantages of this stainless are said to be: excellent corrosion resistance, high resistance to scaling conditions, low annealing temperature, good workability and

NEW REACTIONS OF FATTY AMINES SHOW PROMISE FOR MANY APPLICATIONS

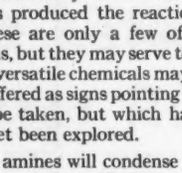
By Dr. M. R. McCorkle, Technical Director, Armour Chemical Division

Fatty amines are organic bases or "alkalis" made from fatty acids. They have only graduated from the laboratory in the past ten years. With the fatty amines commercially available, many chemists are looking at them with a great deal of interest.

It is the chemical versatility of the fatty amines which offers such great promise. Many of their desirable traits have been inherited from ammonia. Many new and useful characteristics have been added. The fatty amines are substituted ammonias and retain most of the reactivity of that compound. On the other hand, the long, normal alkyl groups derived from fatty acids impart additional desirable properties, such as surface activity, oil solubility, etc.

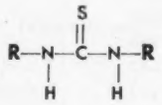
Recent laboratory work with the fatty amines has produced the reactions given below. These are only a few of the new applications, but they may serve to indicate how these versatile chemicals may be used. They are offered as signs pointing out roads that may be taken, but which have probably not yet been explored.

Primary amines will condense with acetonyl acetone to form N-alkyl substituted 2,5-dimethylpyrroles which can in turn be reduced to the corresponding N-alkyl pyrrolidines.

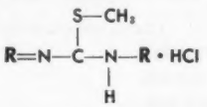


These alkylpyrrolidines are strong tertiary amines whose salts are cationic surface active agents. They are easily converted to quaternary ammonium compounds.

The primary fatty amines will react with carbon disulfide to form N,N'-dialkyl thioureas.

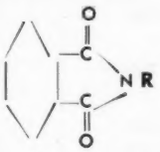


These substituted thioureas react with methyl chloride to give corresponding S-methyl isothiouronium hydrochlorides.



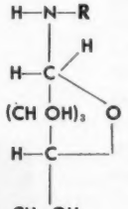
These sulfur-containing cation-active salts are slightly soluble or dispersible in water.

The primary amines will react with dibasic acids or their anhydrides to give the corresponding diamides or imides. For example, reaction with phthalic anhydride yields N-alkyl phthalimide.

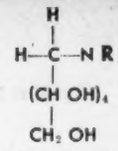


These products are wax-like in nature.

Glucose reacts with the fatty amines to form N-alkyl glucosylamines.



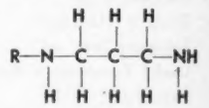
Hydrogenation of the glucosylamine yields N-alkyl sorbitylamine.



The basic reactions and properties of fatty amines are covered in our free booklet, "The Chemistry of Fatty Amines", which also lists all of our primary amines. If the reactions of any of these amines look interesting to you, samples are readily available.

AMINE DERIVATIVES NOW IN COMMERCIAL PRODUCTION

Work with derivatives of these primary and secondary amines has led to the commercial production of new Armour products, the Duomeens. These diamines undergo similar reactions to those of primary and secondary amines. They have the following chemical structure, wherein the normal alkyl group "R" varies in chain length from C_{12} to C_{18}. The C_{16} and C_{18} chains can be produced with a fully saturated chain or degrees of unsaturation.



These diamines are soluble in a wide variety of organic solvents including alcohols, ethers, ketones, chlorinated solvents, and aliphatic and aromatic hydrocarbons. They are not soluble in water but certain members show a slight dispersibility in water at higher temperatures.

Because of their double amine groups, these compounds are strong organic bases and exhibit greater cationic properties than their corresponding primary amines.

The mono- and di-salts of these diamines with both organic and inorganic salts are formed quite readily. Salts of the inorganic acids and the lower organic acids are soluble or dispersible in water.

Indicated applications are as corrosion inhibitors, chemical intermediates, bactericidal agents, pigment grinding and dispersant aids and in asphalt bonding.

Check the coupon for samples of any or all of the following new materials plus literature:

Duomeen C—from coco fatty acids
Duomeen 12—from lauric acid
Duomeen S—from soya fatty acids
Duomeen T—from tallow fatty acids

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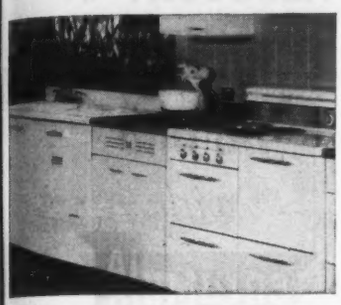
ARMOUR CHEMICAL DIVISION
ARMOUR AND COMPANY • 1355 WEST 31ST STREET • CHICAGO 9, ILLINOIS

NEW LOW COST NEO-FAT® PROVIDES HIGH QUALITY NON-DRYING ALKYD FINISHES



Neo-Fat 280 is a new low cost material for the production of high-bake alkyd finishes. It parallels the performance of present fatty acids at much lower cost, providing many of the same advantages as our high purity lauric. It offers the same freedom from unsaturated fatty acids, for example—with less than 1% unsaturated content, maximum. It meets all the requirements to give tough, flexible finishes of superior quality.

When properly formulated, applied and baked, Neo-Fat 280 provides excellent non-yellowing properties. Urea or melamine resin-modified alkyds made with Neo-Fat 280 are stable to both heat and light. This Neo-Fat guarantees whites that stay white regardless of age or atmospheric conditions.

The unusual properties of urea or melamine resins combine with and support the properties of Neo-Fat 280 alkyds to provide permanently tough and flexible finishes that will not check or embrittle on aging. Alkyds made with this material have clear, strong, hard films with outstanding resistance to greases, oil, conventional soaps, solvents and other similar chemicals. These properties mean superior enamels for use in the protection of appliances such as refrigerators, stoves, cabinets, etc.

Specifications for Neo-Fat 280 include a titer of 31 to 36°C.; iodine value of 1 max.; acid value of 275 to 281; unsaponifiable content 0.2% max.; color, Lov. 5¼", 1R/10Y max.; or Gardner, 1933 standards, 1 max. The fatty acid composition averages 56% myristic, 37% capric, 4% lauric, 2% palmitic and 1% caprylic.

Neo-Fat 280 is available in 55-gallon drums and in tankcars. Send the coupon on your letterhead for a free sample.

ARMOUR'S FRACTIONATED COCONUT OIL FATTY ACIDS NOW EVEN HIGHER IN PURITY

A short while ago, the Armour Chemical Division announced that the purity standards had been raised on its line of fractionally distilled coconut oil fatty acids. Minimum concentration is now 92%! Because this is a degree of purity never before commercially available, these Neo-Fats have become more popular than ever.

The Armour-developed fractional distillation process makes available to you the specific fatty acid you require. Ordinary distilled coconut oil fatty acids are mixtures of up to nine different acids, in percentages varying from 0.5% to 48%. Each of these component acids has its own specific chemical and physical properties which make it valuable for some uses but unsatisfactory for others. When you buy from Armour, you get the specific acid you need, rather than a mixture of up to nine different ones.

The chart below gives the new specifications for these Neo-Fats. At the same time that purity standards were raised, the iodine value of these acids has been lowered and the color lightened.

Send the coupon with your letterhead for a free copy of our new booklet, "Coconut Oil Fatty Acids" which includes all pertinent information on these products.

	Iodine		Acid Value		Titer, C.		Color, Lovibond 5¼"	Caproic	Caprylic	Capric	Lauric	Myristic	Palmitic
	Min.	Max.	Min.	Max.	Min.	Max.		%	%	%	%	%	%
Neo-Fat 8 (caprylic acid)	—	1.0	387	392	—	16°	2 R-20 Y	3	93	4			
Neo-Fat 10 (capric acid)	—	1.0	323	329	28°	33°	2 R-20 Y		3	92	5		
Neo-Fat 12 (lauric acid)	—	1.0	278	282	41°	44°	1.0 R-10 Y			1	95	4	
Neo-Fat 14 myristic acid)	—	1.0	243	249	48°	52°	T.0 R-10 Y				3	94	3

NEW SOLVENT CRYSTALLIZED OLEIC ACIDS

Ester-free oleic acids are the result of a new Armour Chemical Division process which utilizes a solvent which does not react with the raw materials. This new process, combined with Armour's low temperature crystallization, assures you advantages not found in ordinary distilled or pressed oleic acids. The extremely low temperatures employed guarantee a substantially lower saturated fatty acid content than conventional types of oleic acids. These new products are characterized by bland odor and excellent heat stability.

Here are the 6 oleic acids: Low Titer Red Oil, 8-11° Red Oil, Saponified Red Oil, Low Titer White Oleic, 8-11° White Oleic, Commercially Pure Oleic.

All 6 of these acids are available in 55 gal. drums and 4,000 and 8,000 gallon aluminum tank cars. Send the coupon today for specifications and current price quotations.

Send literature: ☐ "The Chemistry of Fatty Amines" ☐ Neo-Fat 280 ☐ Coconut Oil Fatty Acids ☐ Duomeen Booklet

Send samples: ☐ Neo-Fat 280 ☐ Neo-Fat 8 ☐ Neo-Fat 10 ☐ Neo-Fat 12 ☐ Neo-Fat 14 ☐ Duomeen C ☐ Duomeen 12 ☐ Duomeen S ☐ Duomeen T

Name..... Title.....

Firm.....

Address.....

City..... Zone..... State.....

1

When inquiring check CP 2719 on handy form, pgs. 2-3

machinability similar to that of SAE 3145, 3250, and 4650.

Bulletin gives detailed data on the steel including comparative properties and availability.

Bul on Stainless No. 3, Type 443, is available from The Carpenter Steel Co., Dept. CP, 112 W. Bern St., Reading, Pa. When inquiring specify CP 2720 on handy form, pages 2 and 3.

No vacuum, pressure needed to stop gas leaks in metal castings . . .

resin impregnator also functions as effective rust and corrosion preventive

Nelsonite C3 is the designation being applied to a resin impregnator for stopping air or gas leaks in aluminum and iron castings. Said to owe its advantages to slow oxidation, Nelsonite C3 has also proven to be a good rust and corrosion preventive.

Product consists of 40% inert resin solids which remain elastic and unaffected by extreme heat or cold. No leaching from metals is reported.

For application, castings are merely immersed without requiring use of pressure or vacuum equipment. Immersion time depends on the porosity and thickness of the casting. Because the resin cures by polymerization, at least three days' curing is required.

After the impregnation process, penetrating qualities of the impregnator permit machining such as honing.

(Nelsonite C3 is a product of Nelsonite Chemical Products, Inc., Dept. CP, 900 Monroe Avenue, NW, Grand Rapids 2, Michigan . . . or for more information check CP 2721 on handy form, pages 2 and 3.)

High solubility at low temps reported for scintillant . . .

used in liquid scintillation counters for measuring minute amounts of radiation

Uses: As a scintillant in liquid scintillation counters for measuring radioactivity.

Features: Said to have far greater solubility at low temperatures than scintillants formerly used in liquid counters.

Description: Laboratory and pilot plant quantities of 2,5-diphenyloxazole are currently available. In use, material is dissolved in toluene to form a scintillation medium in which an entire sample of radioactive material may be immersed for counting.

A liquid scintillation counter is particularly adapted to measuring minute amounts of radioactivity since the entire spherical pattern of radiation can be intercepted and counted. On the other hand, only the portion of the radiation which is directed toward the instrument can be counted with the Geiger counter or the crystal scintillation counter.

(2,5-Diphenyloxazole is a product of Arapahoe Chemicals, Incorporated, Dept. CP, Boulder, Colorado . . . check CP 2722 on form, pages 2 and 3.)

SPECIFICATIONS

86-88	Melting Point (°C)	
70-74	Titre (°C)	70-74
4 Max.	Acid Number	172-182
177-181	Saponification Value	182-187
3 Max.	Iodine Value	4 Max.
155 Min.	Hydroxyl Value	147 Min.
138 Min.	Acetyl Value	133 Min.

These uniform quality HYDROFOL products are being used successfully in widely diversified industries. Typical products are: *lithium-base greases,* adhesives, waxes, cosmetics, paper, rubber, transfer inks, hot melt coatings, plastic phonograph records. Perhaps your products can be further improved with either HYDROFOL Glycerides 200 or HYDROFOL Acids 200. Available for immediate shipment in carload and less-carload quantities. Check the specifications above and write for samples or more information.

Hydrofol
ACIDS • GLYCERIDES • SPERM OILS • ALCOHOLS
FROM VEGETABLE • ANIMAL • MARINE OILS AND FATS
Produced in any quantity
SAMPLES TO SHIPLOADS
ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 7, Ohio

When inquiring check CP 2723 on handy form, pgs. 2-3

Acts as the vehicle for water-based paints . . .

films dry so rapidly that they can be sanded and recoated in 2 hours, if desired

Uses: Polyvinyl acetate copolymer emulsion for use as vehicle in primer as well as top-coat water-based coatings. Applications are also recommended in adhesives.

Features: Coatings formulated with the vehicle are reported to possess quick drying and exceptionally good sealing and non-yellowing properties. Good resistance to grease and light are reported.

Adhesion of the dried paint film to plaster, concrete, wallboard, asphalt, creosoted surfaces, wood, brick, and asbestos shingles is very good. Paints are said to dry so rapidly that recoating and sanding, if desired, are possible within two hours after application.

Description: Polyco 505 polyvinyl acetate copolymer emulsion has the following reported specifications:

Solids, %	55
pH	4.0-4.5
Particle Size, microns	0.5-1
Free Monomer, % max	0.3
Viscosity, cps	1500-2000
Water Resistance	excellent
Heat Stability of Film @ 250°F	no discoloration in 1 hour
Mechanical Stability	excellent
Settling Rate	excellent
Emulsion Type	nonionic

(Polyco 505 is a product of the American Polymer Corporation, Dept. CP, 101 Foster Street, Peabody, Massachusetts . . . or for more information check CP 2724 on handy form, pages 2 and 3.)

Liquid soil conditioner available in new formulation

Poly-Ack, one of the early synthetic resin soil conditioners and the first liquid type, is now available in a new formulation — Poly-Ack #15. Product has been developed especially for use on agricultural acreage for controlling soil crusting and hard-panning, thus accelerating germination, increasing moisture and fertilizer penetration, and facilitating seedling emergence.

(Product of Wilson Organic Chemicals, Incorporated, Dept. CP, Sayreville, New Jersey . . . or for more information check CP 2725 on handy form, pages 2 and 3.)

Reviews year's developments in the paint industry

Seventy-six page reprint of comprehensive article discusses such topics as the business and government pictures as they affected the paint industry; new paint products; important developments in drying oils, fatty acids, waxes, chemical inter-

99%+ RECOVERY of SOLVENT VAPORS *with*

COLUMBIA
Activated Carbon

. . . this is the efficiency of most COLUMBIA Activated Carbon solvent recovery plants. And the cost of recovery, in many cases, is less than 0.5¢ per pound of solvent.

Every year, COLUMBIA Activated Carbon solvent recovery plants save industry more than $150,000,000 by recovering over *2 billion* pounds of solvent vapors—

ALCOHOLS . . . . . ESTERS
ETHERS . . . . . KETONES
. . . HYDROCARBONS . . .
CHLORINATED COMPOUNDS
. . . and many other low-boiling solvents.

We can design and supply a complete solvent recovery plant to fit your specific requirements. For further information, write for booklet, F-6658.

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.
UCC
"Columbia" is a registered trade-mark of Union Carbide and Carbon Corporation.

When inquiring check CP 2726 on handy form, pgs. 2-3

mediates, resins, lacquers, emulsion paints, plasticizers, pigments, metal preparation, paint production, plant maintenance, testing and evaluation.

To obtain "Developments in the Paint Industry for 1952" remit $1.50 direct to Powell Magazines, Inc., 855 Avenue of the Americas, New York 1, N. Y.

Improves the hand of rayons, cottons, synthetics

Uses: Finishing agent for rayons, cottons, and synthetics. Reported to provide a firm, crisp, full hand.

Features: Offered as a concentrate, providing economies in handling and storage.

Description: Aerotex Syrup 250 Conc. is compatible with melamine and urea resins, with starches, gums, and softeners. Used alone or in combination with other resins it provides a durable, highly uniform finish, maker reports. It is stable in bath and is simple to apply.

(Product of the American Cyanamid Company, Textile Resin Department, Dept. CP, 30 Rockefeller Plaza, New York 20, New York . . . or for more information check CP 2727 on handy form, pages 2 and 3.)

Offer reactive intermediate — perchloromethyl mercaptan

Uses: Reactivity of the chlorine atom attached to the sulfur atom makes perchloromethyl mercaptan a useful material in the preparation of insecticides, fungicides, oil and fuel additives, dyes and dye intermediates, and many other chemicals.

Features: In spite of the toxic nature of the chemical, it has been handled in laboratory and pilot plant quantities over an extended period without injury to personnel, by taking care to provide adequate ventilation and avoiding inhalation of the vapors and direct contact with the liquid.

Description: Perchloromethyl mercaptan (also known as trichloromethanesulfenyl chloride and thiocarbonyl tetrachloride) is a pale yellow oil which boils at 149°C with some decomposition at atmospheric pressure. Density is 1.700 gm/ml at 20°C, and it is soluble in organic solvents.

Product undergoes the oxidation and reduction reactions, and will react with primary, secondary, and tertiary amines; with amides and imides; with olefins; with thiolcarboxylic acids, xanthates, and trithiocarbonates; with sodium alkoxides; and reactions with Grignard reagents.

(Product of the Stauffer Chemical Company, Dept. CP, 420 Lexington Avenue, New York 17, New York . . . or for more information reader may simply check CP 2728 on handy Reader Service slip between pages two and three.)

How can new A-C Polyethylene fit into your picture?

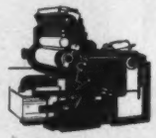
A-C Polyethylene was formerly known as ALCOWAX

Bread Wraps

Dairy Cartons

For Upgrading Petroleum Waxes

Polishes


Printing Inks of All Types

OR OTHER USES such as . . .

- in making paper cups and dishes
- for leather treatment
- in varnishes and water paints
- in cosmetics
- as a lining for metal containers
- in manufacture of candles
- as a protective coating
- for latex dispersions
- in investment wax
- as a lubricating aid in processing plastics
- for fabricating and waterproofing

A-C POLYETHYLENE—in its present form—is a low molecular weight polymer that shows great promise as an ingredient for various film-forming materials. In appearance it is translucent white in color! And it is tasteless . . . substantially odorless . . . non-toxic!

THIS VERSATILE NEW material has a low density, is resistant to most chemicals at room temperature, as well as to water. In addition, it has excellent electrical properties.

ONE OF THE BIG ADVANTAGES A-C Polyethylene has over similar materials is *low viscosity*. And it is readily compatible with most waxes and wax-like materials. These highly desirable properties also make possible close formulation control. As a result of this ease of dispersion and retention in solution, these advantages enable you to self-blend compounds used in paper coating and in certain other operations. It's easier to handle . . . easier to blend . . . easier to use!

A-C POLYETHYLENE is supplied in grades No. 6 and No. 7, physical properties noted above, right. It can also be supplied in various low molecular weight grades that are readily emulsifiable, more soluble and dispersible, etc.

physical properties
of currently available grades

	Grades No. 6	Grades No. 7
Mol. Wt. (Approx. Ave.)	2100	2100
Mt. Pt. °C	97/102	102/106
Hardness mm. 75° F 200 grams at 5 seconds	0.3-0.5	0.2-0.3
Flash °F	470-495	480-500

MAIL THIS COUPON

For Samples and Technical Help

Semet-Solvay has a fully staffed laboratory to provide you with detailed technical information. Our technical representatives are available for consultation—without obligation—to:

- help you adapt A-C Polyethylene to your production processes
- help you with any related problems you may have

Samples in test quantities are also available. There is no cost or obligation.

Fill in and mail coupon today.

Petrochemical Sales
SEMET-SOLVAY DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

Petrochemical Sales, SEMET-SOLVAY DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

I am interested in A-C Polyethylene for possible use in_____

Please send, without cost or obligation, more technical data plus samples.

Name_____ Title_____

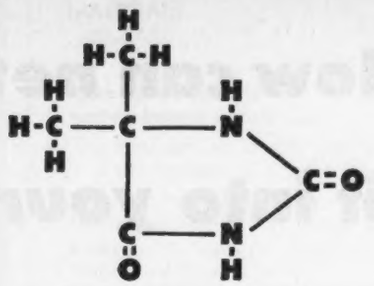
Company_____

Address_____

City_____ Zone____ State_____ CP-8

When inquiring check CP 2729 on handy form, pgs. 2-3

NOW AVAILABLE IN DEVELOPMENT QUANTITIES



DIMETHYL HYDANTOIN

A VERSATILE COMPOUND OFFERING INTERESTING POSSIBILITIES AS A CHEMICAL INTERMEDIATE

REACTIONS

- Substitutions can be made in the imino and carbonyl groups.
- Fission of the ring is possible with mineral acids and dilute alkali solutions.
- Mono- and di-N-halogen derivatives are secured by halogenation.
- Reactions with formaldehyde yield a variety of compounds, including methylol derivatives and a series of resins varying from viscous, oily liquids to hard, brittle, transparent solids. These resins are soluble in water, yielding low viscosity solutions which dry to hard, glossy films.

AVAILABLE DERIVATIVES

In addition to dimethyl hydantoin, development quantities of the following are available from Du Pont:

MONOMETHYLOL DIMETHYL HYDANTOIN (MDMH)
DIMETHYL HYDANTOIN—FORMALDEHYDE RESIN (DMH-F)

PROPERTIES

Appearance...White, crystalline solid
Odor.....None
Molecular Weight.....128.13
Melting Point.....178°C

Solubilities

Water.....11.5% at 10°C
13.5% at 20°C
16.5% at 30°C

Organic Solvents...Soluble in ethanol, diethyl ether, ethyl acetate. Insoluble in hydrocarbons and trichlorethylene.

A REQUEST **on your company letterhead will bring technical bulletins and price information. Write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.**

DU PONT ELECTROCHEMICALS
DUPONT

When inquiring check CP 2730 on handy form, pgs. 2-3

MATERIALS

Non-combustible solvents show low toxicity . . .

expected to be of interest to safety engineers as well as process men

A group of non-combustible safety solvents is now being offered to replace carbon tetrachloride in specialized fields of cleaning. Products are reported to be of interest to safety engineers and process men because of comparatively low toxicity. All are close to carbon tetrachloride in speed of evaporation; none contains petroleum hydrocarbons.

Cineclene M-5 Solvent is useful for cleaning metals prior to brazing or where fast drying and good degreasing properties are needed without causing a fire hazard.

Oxylene M-6 Solvent is for cleaning oxygen systems and equipment. May also be used for cleaning metals prior to micro or spectroscopic analysis, as well as for critical brazing operations involving use of silver and other semi-precious metals. It dries faster than carbon tetrachloride. Maximum allowable atmospheric contamination is 500 ppm.

Furfasol M-17 Solvent can be employed as a replacement for acetone and methyl ethyl ketone in cleaning latex and resin adhesive products from process equipment. It is reported to possess properties akin to both halogens and some esters.

(Products of the John B. Moore Corporation, Dept. CP, PO Box 3, Nutley 10, New Jersey . . . or for more information check CP 2731 on handy form, pages 2 and 3.)

Properties tabulated on 7 fatty alcohols

Detergents, dye solubilizers, insecticides, emulsions, plasticizers, oil additives, waterproofing compounds and germicides are some of the industrial applications for the seven fatty alcohols whose properties are detailed in folder. As they are produced by the separation of the wax esters of sperm oil, they are composed principally of oleyl, cetyl or steryl alcohols, or mixtures of these alcohols.

Tabular material presented includes analytical data on titer, iodine number, hydroxyl value, acid number and composition. Latest price quotations on the materials are also given. "Crodacol Range of Fatty Alcohols" is issued by Croda Inc., Dept. CP, 51 Madison Ave., New York 10, N. Y. When inquiring specify CP 2732 on handy form, pages 2 and 3.

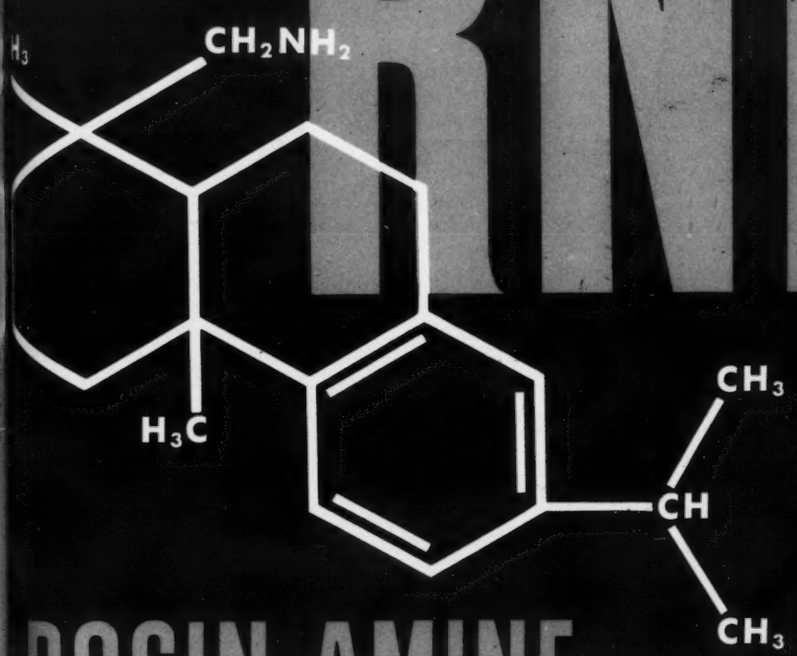
Purity of thymidine is over 99%

Uses: Finds utility in biochemical research and in pharmaceutical applications. Has ability to replace the vitamin B_{12} and folic acid required for the growth of some bacteria.

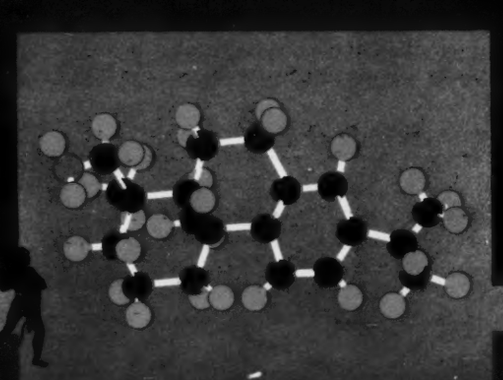
Features: Purity of over 99%.

STARTING POINT

RNH_2



ROSIN AMINE



HERCULES POWDER COMPANY

RNH2
CH
H2NH

DO THESE KNOWN REACTIONS OF ROSIN AMINE D SUGGEST OTHERS TO YOU?

Reaction With Acids To Form Salts

Hercules Rosin Amine D reacts with acids and other substances containing a group which functions as an acid (such as a phenolic hydroxy group) to form salts, example:

$$RNH_2 + CH_3COOH \longrightarrow RNH_2 \cdot CH_3COOH$$

Typical acids which may be used include hydrochloric, boric, acetic, stearic, adipic, benzoic, naphthenic, various sulfonic acids, and acidic-reacting phenols such as pentachlorophenol.

Reaction With Acids To Form Amides

Some Rosin Amine D salts can be heated to form the substituted amides, example: the heating of RADA (Rosin Amine D Acetate) to a relatively high temperature gives a substituted acetamide.

$$RNH_2 \cdot CH_3COOH \xrightarrow{\text{heat}} CH_3CONHR + H_2O$$

Reaction With Ethylene and Propylene Oxides To Form Condensates

Rosin Amine D reacts with ethylene oxide to form condensates, example: the polyethylene glycol ethers of the diethanol derivative.

$$RNH_2 + CH_2CH_2 \longrightarrow RN\text{-}(CH_2CH_2O)_nCH_2CH_2OH)_2$$

Other oxides such as propylene oxide and glycidol (2,3-epoxy-1-propanol), or mixtures of oxides may be used in place of ethylene oxide to form adducts.

Reaction With Carbon Disulfide To Form A Dithiocarbamate Or Thiourea

Rosin Amine D reacts with carbon disulfide to form the Rosin Amine D salt of an N-substituted dithiocarbamic acid:

$$2RNH_2 + CS_2 \longrightarrow RNHCSSHNH_2R$$

Heating the above salt yields an N,N′-substituted thiourea:

$$RNHCSSHNH_2R \xrightarrow{\text{heat}} RNHCSHNR + H_2S$$

Reaction With Metal Salts To Form Metal Complexes

Complex metal salts are formed by reacting Hercules Rosin Amine D with metal salts. Generally, two moles of Rosin Amine D and one mole of the metal salt are involved in this type of reaction, example:

$$2RNH_2 + (CH_3COO)_2Cu \longrightarrow 2RNH_2 \cdot (CH_3COO)_2Cu$$

Complex salts of copper, zinc, silver, nickel, manganese, cobalt, mercury, calcium, aluminum, iron, and chromium have been prepared. Usually the acetate of the metal is used, but other salts including the sulfate, chloride, and nitrate also react. The resulting products are resinous in character and are soluble in organic solvents.

Reaction With Phosgene To Form Rosin Isocyanate

Rosin Amine D hydrochloride reacts with phosgene to yield rosin isocyanate:

$$RNH_2 \cdot HCl + COCl_2 \longrightarrow RNCO + 3HCl$$

This isocyanate will react with a variety of compounds containing active hydrogens.

Reaction With Acrylonitrile To Form A Diamine Or An Amino Acid

Rosin Amine D reacts readily with acrylonitrile to form an adduct:

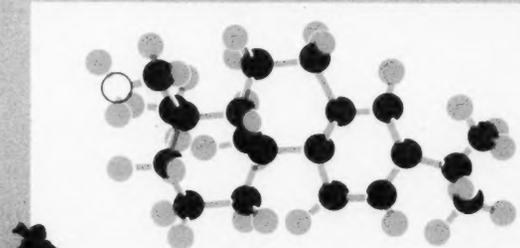
$$RNH_2 + CH_2{=}CHCN \longrightarrow RNHCH_2CH_2CN$$

which is readily hydrogenated to a diamine:

$$RNHCH_2CH_2CN + 2H_2 \longrightarrow RNHCH_2CH_2CH_2NH_2$$

or is readily hydrolized to form an amino acid:

$$RNHCH_2CH_2CN + 2H_2O \longrightarrow RNHCH_2CH_2COOH + NH_3$$



HERCULES

DO THESE KNOWN USES SUGGEST NEW POTENTIAL FIELDS FOR YOU?

ASPHALT
- Highway Construction Cut-Backs
- Mastic Cements

BIOLOGICAL GROWTH CONTROL
- Algaecides
- Bactericides
- Fungicides
- Molluscacides
- Cordage Preservatives
- Disinfectants & Sanitizers
- Fabric Preservatives
- Irrigation-Canal Algaecides
- Paint Mildewcides
- Protein & Carbohydrate Preservatives
- Wood Preservatives

CORROSION INHIBITORS
- Atmospheric-Type Rusting
- Protection of Copper against Hydrochloric Acid
- Compressed Natural Gas Pipelines
- Crude Oil Wells
- Inhibitors for Hydrochloric Acid Industrial Cleaning Well Acidizing
- Petroleum-Refining Equipment
- Secondary Recovery

EMULSIFIERS
- Oil & Wax Emulsifiers
- Emulsifiers for Chemical Processes

FLOTATION AGENTS

INKS
- Ceramic Inks
- Printing Inks

PAINTS & VARNISHES
- Pigment Flushing
- Varnish Gel Control

RUBBER
- Reclaiming
- Compounding
- Adhesives
- Emulsion Polymerization

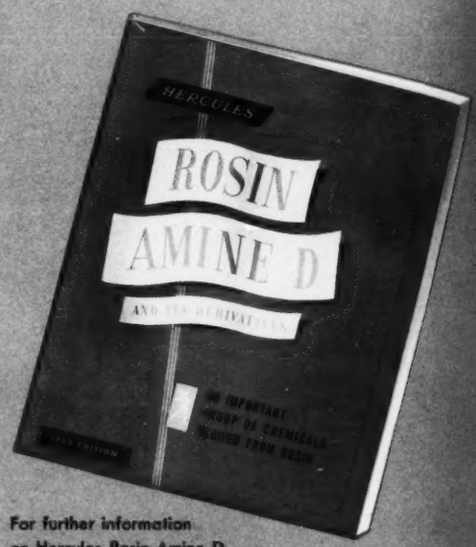
TEXTILE
- Bonding Aid for Cellulosics
- Viscose Rayon Manufacturing

HERCULES ROSIN AMINE D PRODUCTS COMMERCIALLY AVAILABLE

PRODUCT	CHEMICAL NATURE
Rosin Amine D	Primary amine; oil-soluble
RADA (Rosin Amine D Acetate)	Water-soluble acetate salt
Rosin Amine D Naphthenate	Oil-soluble salt
Rosin Amine D Stearate	Oil-soluble salt
Rosin Nitrile D	Primary nitrile; oil-soluble
Polyrad®	Ethylene oxide derivatives
Polyrad 0100	Oil-soluble
Polyrad 0200	Oil-soluble
Polyrad 0500	Acid-soluble
Polyrad 0515	Acid-soluble
Polyrad 0515A	Acid-soluble
Polyrad 1100	Water-soluble
Polyrad 1110	Water-soluble
Polyrad 1110A	Water-soluble
Polyrad 2000	Water-soluble

The facts stated and recommendations made for Rosin Amine D and its derivatives are based on Hercules research and the research of others, and are believed to be accurate.

400-449 HA53-2



For further information on Hercules Rosin Amine D and its derivatives, send for this book.

Description: Maker's thymidine is currently available in sufficient quantities for research purposes. The production process permits large scale manufacture at costs which may prove advantageous over products with related nutritional effects, maker reports.

(Thymidine is a product of Schwarz Laboratories, Incorporated, Dept. CP, 230 Washington Street, Mount Vernon, New York . . . or for more information check CP 2733 on handy form, pages 2 and 3.)

New series of modified epoxide resins

Technical bulletins describe in detail a new series of pigmented and filled modifications of manufacturer's Hysol 6020 resin. Product is a liquid epoxide resin which will cure at room temperatures by the addition of selected catalysts. Additions of fillers are stated to impart better heat conductivity, lower shrinkage and reduced thermal expansion.

Pigmentation has been added to the product to make it available in nine standard colors — with other colors being furnished to specification. Uses of resin have included potting of coils, transformers, resistors; sealing of diodes; and the casting of bushings and mechanical parts. Tech buls #603 and #6020 are issued by Houghton Laboratories, Inc., Dept. CP, Olean, N. Y. When inquiring specify CP 2734 on handy form, pages 2 and 3.

Offering tank car lots of 2-pyrrolidone . . .

finds use as versatile chemical intermediate and as selective solvent

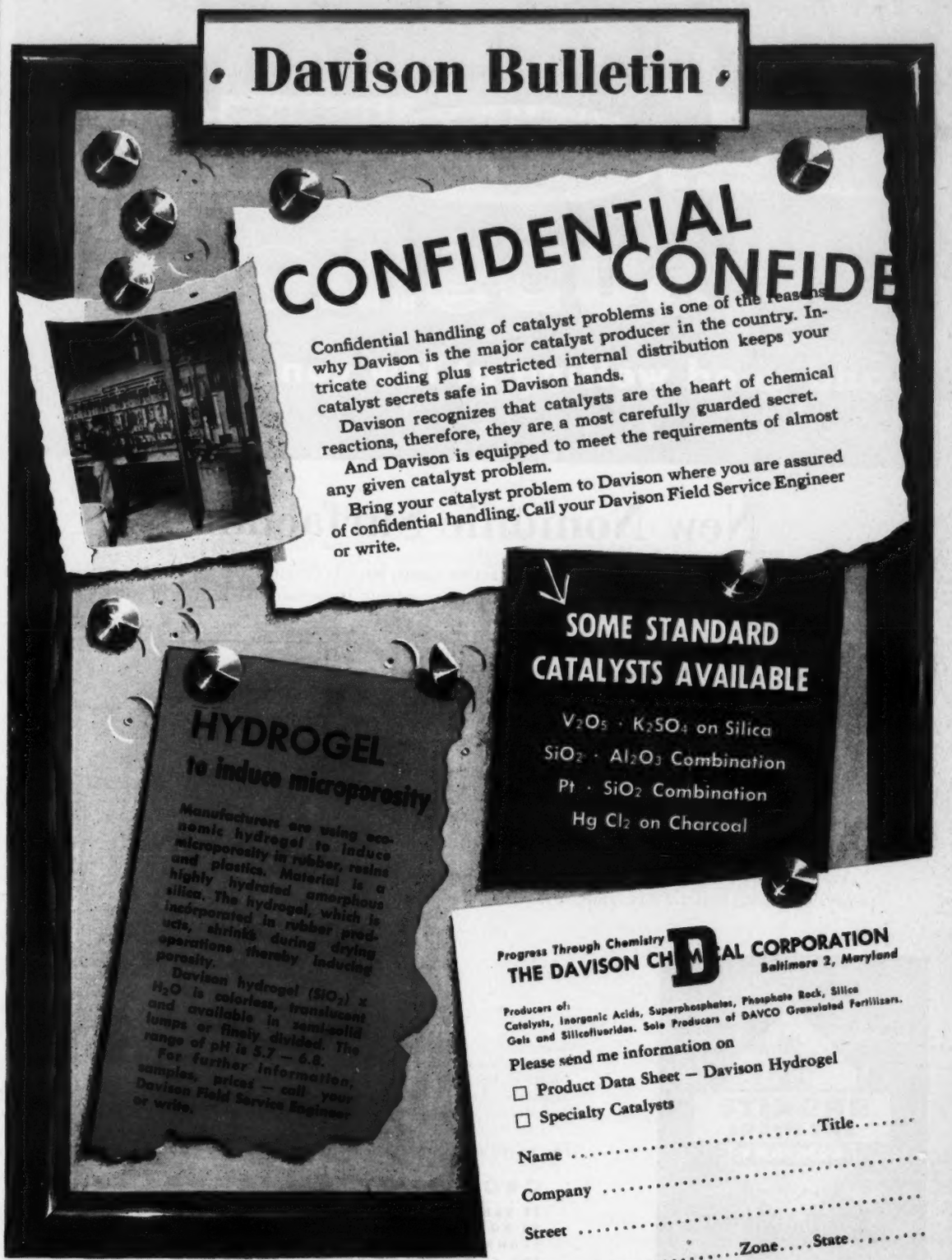
Uses: Has value as a chemical intermediate in reactions involving substitutions on the ring nitrogen. The ring may also be opened to form gamma-aminobutyric acid. The end products here find usage in the pharmaceutical, cosmetic, and textile industries. Product is also of potential interest as a selective solvent.

Features: Material is currently available in tank-car quantities.

Description: 2-Pyrrolidone is a high pressure acetylene derivative. It is a five membered heterocyclic ketone.

(2-Pyrrolidone is a product of the General Aniline & Film Corporation, Dept. CP, 230 Park Avenue, New York 17, New York . . . or for more information check CP 2735 on handy Reader Service slip, pages 2 and 3.)

For more information on product at left, specify CP 2736 . . . see information request blank between pages 2 and 3.


• Davison Bulletin •
CONFIDENTIAL CONFIDE
Confidential handling of catalyst problems is one of the reasons why Davison is the major catalyst producer in the country. Intricate coding plus restricted internal distribution keeps your catalyst secrets safe in Davison hands.
Davison recognizes that catalysts are the heart of chemical reactions, therefore, they are a most carefully guarded secret.
And Davison is equipped to meet the requirements of almost any given catalyst problem.
Bring your catalyst problem to Davison where you are assured of confidential handling. Call your Davison Field Service Engineer or write.
HYDROGEL
to induce microporosity
Manufacturers are using economic hydrogel to induce microporosity in rubber, resins and plastics. Material is a highly hydrated amorphous silica. The hydrogel, which is incorporated in rubber products, shrinks during drying operations thereby inducing porosity.
Davison hydrogel (SiO_2) x H_2O is colorless, translucent and available in semi-solid lumps or finely divided. The range of pH is 5.7 — 6.8.
For further information, samples, prices — call your Davison Field Service Engineer or write.
SOME STANDARD CATALYSTS AVAILABLE
V_2O_5 · K_2SO_4 on Silica
SiO_2 · Al_2O_3 Combination
Pt · SiO_2 Combination
$Hg\ Cl_2$ on Charcoal
Progress Through Chemistry
THE DAVISON CHEMICAL CORPORATION
Baltimore 2, Maryland
Producers of:
Catalysts, Inorganic Acids, Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO Granulated Fertilizers.
Please send me information on
☐ Product Data Sheet — Davison Hydrogel
☐ Specialty Catalysts
Name .....Title.....
Company .....
Street .....
City .....Zone....State.....
When inquiring check CP 2737 on handy form, pgs. 2-3

LOW SUDSING

and good wetting at low concentration

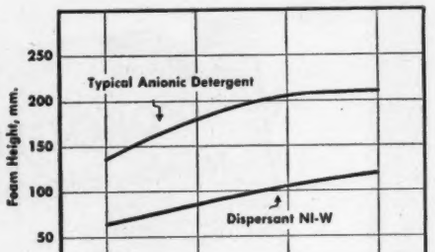
New Nonionic Surfactant

If you have an operation requiring a surface active agent, but where "suds" or "foam" are a handicap, it will pay you to investigate Oronite's new water-soluble Dispersant NI-W. It will solve this problem for you.

Because NI-W is in the chemical class of alkylphenyl polyethoxyethanols, it is both heat and chemically stable. It is effective in hard or soft water. It is completely compatible with soaps, anionic detergents and cationic germicides.

NI-W may be compounded with phosphate or other builders and dried to give free-flowing granular products. Suitable also for making liquid detergents. NI-W is a very adaptable product for the manufacture of economical high-quality formulations.

Available in inner-coated drums or tank cars for product purity. Technical bulletin and sample available on request.



ROSS-MILES FOAM TEST
SOLUTION TEMPERATURE 110°F—WATER HARDNESS 300 ppm
The above chart shows, that at equal concentrations, the foam created by Dispersant NI-W is only about half as high as when a typical anionic detergent (alkyl aryl sodium sulfonate type containing approximately 40% active ingredient) is used.

ORONITE CHEMICAL COMPANY
THE NAME TO WATCH IN CHEMICALS

2015

A partial list of Oronite products:

Detergent Alkane, Detergent Slurry, Detergent D-40, Detergent D-60, Dispersant NI-O (oil-soluble emulsifier), Dispersant NI-W, Wetting Agents, Lubricating Oil Additives, Cresylic Acids, Gas Odorants, Sodium Sulfonates, Polybutenes, Naphthenic Acids, Phthalic Anhydride, Ortho-Xylene, Xylol, Aliphatic Acid, Hydroformer Catalyst, Dispersant FO (Domestic Fuel Oil Inhibitor)

"The world's largest producer of synthetic detergent raw materials"

ORONITE CHEMICAL COMPANY

38 SANSOME STREET, SAN FRANCISCO 4, CALIFORNIA
30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK
STANDARD OIL BLDG., LOS ANGELES 15, CALIFORNIA
600 S. MICHIGAN AVENUE, CHICAGO 5, ILLINOIS
MERCANTILE SECURITIES BUILDING, DALLAS 1, TEXAS

When inquiring check CP 2738 on handy form, pgs. 2-3

Synthetic hydroxylation yields two new plasticizers . . .

for vinyl and cellulosic resins, synthetic rubbers; hydroxy acid derivatives also useful

Uses: Primary plasticizers for cellulosic resins and synthetic rubbers, and secondary plasticizers for vinyl resins.

Hydroxy acid derivatives are expected to find use in the grease trade, cosmetics, metallic soap manufacture, and cutting oils.

Features: These hydroxylated plasticizers are reported to excel fatty plasticizers in compatibility with vinyl chloride resins, lower volatility, greater resistance to ultraviolet exposure, stability to oxidation, and freedom from rancidity.

Description: Estanox 203 (butyl hydroxy-acetoxy ester) and Estanox 206 (butyl poly-acetoxy ester) are prepared by synthetic hydroxylation of readily available and inexpensive vegetable oils and inedible animal fat. Properties are tabulated below:

	Estanox 203	Estanox 206
Color, Gardner	5	10
Specific Gravity @ 25/25°C	0.956	0.973
Viscosity, GH @ 25°C	B+	B+
Acid Value	4	3
Saponification Value	207	342
Iodine Value	24	21
Hydroxyl Value	155	10

Maker has already initiated semi-commercial production on a group of derivatives of these products — a series of synthetic hydroxystearic acids. At present, dihydroxystearic and polyhydroxystearic acids are being offered.

(Products of the Baker Castor Oil Company, Department CP, 120 Broadway, New York, New York . . . or for more information reader may simply check CP 2739 on handy Reader Service slip between pages two and three.)

Thermosetting resin in liquid form requires only short baking cycle

Available in liquid form, thermosetting casting resin can be cast in simple molds and requires only a short baking cycle at 140°F. Although material can be cast without the use of pressure, parts fabricated of the plastic have properties similar to phenolic plastic parts molded under heat and pressure.

Sixteen-page booklet outlines applications for plastic in short-run production, model or prototype work, foundry patterns, jigs and fixtures, novelty castings, electroplating shields, large part production, masking fixtures, and special electrical and corrosion-resistant parts.

"Durez Casting Resin" is issued by Durez Plastics & Chemicals, Inc., Dept. CP, Walck Rd., North Tonawanda, N.Y. When inquiring specify CP 2740 on handy form, pages 2 and 3.

Presents disinfectant formulations of germicide

Typical disinfectant formulations of Santophen 1 germicide, effective against a variety of bacteria and fungi, are contained in 16-page booklet. Formulations, incorporating either fatty acid soap or synthetic dispersing agents, are recommended for disinfectant-cleaners, and a number of sanitizing and deodorizing applications.

Another use for the chemical is in prevention of bacterial and algea growths in air conditioning system cooling water. Santophen 1 and Santophen 1 solution (75% by weight in isopropanol) are effective against both gram-positive and gram-negative bacteria.

Germicide is essentially colorless, of a mild odor, and a low order of toxicity to higher animals. Additional information is included on product's physical and chemical properties, skin irritation, and germicidal potency.

Booklet on Santophen 1 is issued by Monsanto Chemical Co., Organic Chemicals Div., Dept. CP, 800 N. 12th Blvd., St. Louis 1, Mo. When inquiring specify CP 2741 on handy form, pages 2 and 3.

Tabulates information on acetylene derivatives

Structures, physical forms, and suggested uses of a series of high pressure acetylene derivatives are briefly tabulated in bulletin. A number of industrial applications are discussed including uses as chemical intermediates, solvents, plasticizers, pharmaceuticals, and brake fluids.

Bul M-104 is issued by Commercial Development Dept., General Aniline and Film Corp., Dept. CP, 435 Hudson St., New York 14, N. Y. When inquiring specify CP 2742 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2743 . . . see information request blank between pages 2 - 3.

Starting point for quality products

Quality products begin with quality ingredients. That's why Nialk Chemicals are used today in so many exacting applications.

for example...

NIALK TRICHLORethylene: For fast, low-cost degreasing of metal parts, NIALK TRICHLORethylene is enjoying a rapidly growing acceptance. This superior degreasing agent cleans and dries in record time...is nonflammable...can be heated by either gas, steam or electricity...and is completely re-usable after distillation.

It is dependable performance like this that has earned for all NIALK chemicals the confidence of many American industries.

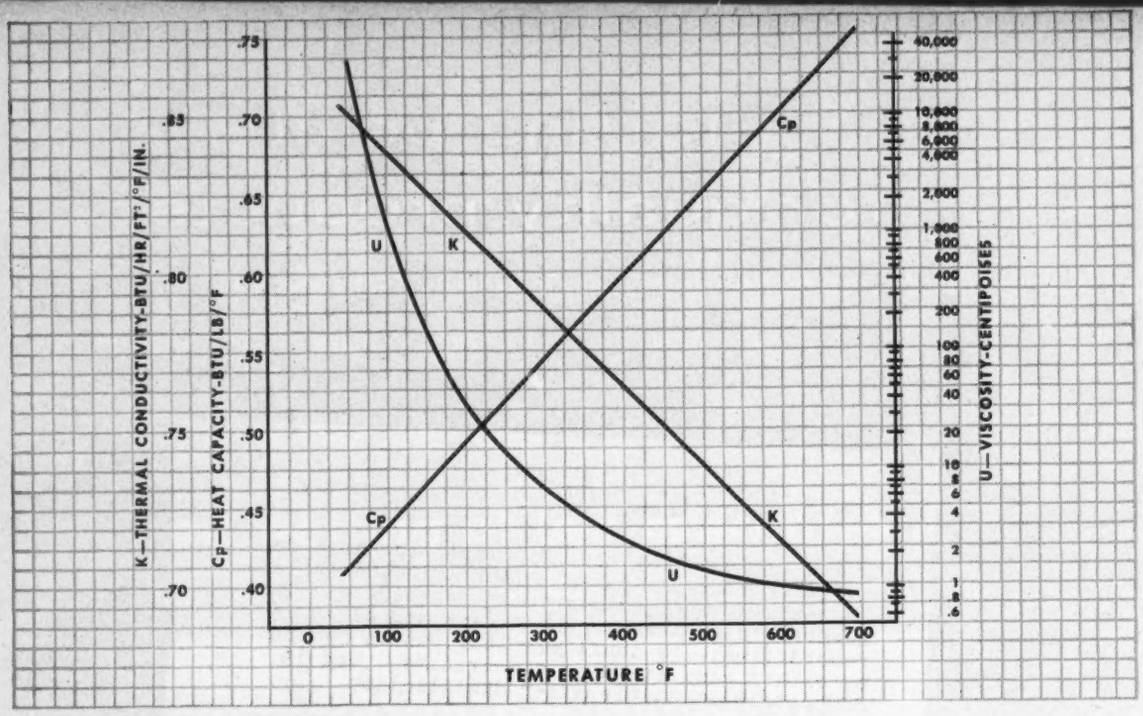
NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York

Nialk

LIQUID CHLORINE
CAUSTIC POTASH
CARBONATE OF POTASH
PARADICHLOROBENZENE
CAUSTIC SODA
TRICHLORethylene

NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)



Thermal properties of Circo XXX Heavy Heat Transfer Oil are indicated as follows: thermal conductivity (K); heat capacity (Cp); viscosity (U).

WHY IS CIRCO XXX HEAVY AN EXCELLENT HEAT TRANSFER MEDIUM

for temperatures as high as 600 F?

because:

1 Its high thermal conductivity assures fast, efficient heat transfer to the process material

2 Its high heat-carrying capacity assures maximum efficiency over its entire operating temperature range

3 It doesn't form hard carbon deposits, which reduce heat transfer efficiency

4 Its low vapor pressure and high initial boiling point prevent pressure buildup

5 Its viscosity is low enough to permit easy circulation with any pump used in an oil-type heat transfer system

Other important properties of Circo XXX Heavy Heat Transfer Oil

Viscosity, SUS at 210 F	145-155
Gravity, Specific	0.94-0.96
Acidity	neutral
Carbon residue	0.5 max
Demulsibility	good
Initial boiling point	approx 860 F
Vapor pressure at 600 F	nil

For more information about heat transfer oils and systems, send for "Circo Heat Transfer Oils." Write SUN OIL COMPANY, Philadelphia 3, Pa., Department CP-8.

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY
SUNOCO®
PHILADELPHIA 3, PA. ◆ SUN OIL COMPANY LTD., TORONTO & MONTREAL

MATERIALS

Addend chemical line by five products

Five new chemical compounds have currently been added to this concern's line. All are of high purity, and all are produced on a pilot plant scale, with the exception of p-aminophenol acid oxalate which is offered in commercial quantities. Compounds are:

1) p-Aminophenol acid oxalate
Formula: $NH_2C_6H_4OH \cdot (COOH)_2$
Uses: photography

2) Bismuth lactate
Formula: $BiH(C_3H_4O_3)_2$
Uses: medicinal

3) Iodine monobromide
Formula: IBr
Uses: organic synthesis

4) Tin (ous) Fluoride
Formula: SnF_2
Uses: laboratory reagent

5) Lead iodate
Formula: $Pb(IO_3)_2$
Uses: laboratory reagent

(Products of the City Chemical Corporation, Dept. CP, 132 West 22nd Street, New York 11, New York . . . or for more information check CP 2744 on handy form, pages 2 and 3.)

Chemical structure vs. drug activity

Contained in the recent "Monthly Bulletin" are two articles that should be of interest to drug people. First, 'Biological Activity — Chemical Structure', explains how concentration, solubility, ionization, and bond distances determine the biological activity of a drug.

Second, 'False Security', is an editorial on a recent pharmaceutical labeling case. It discusses informative labeling and warns against the copying of labels of other firms, especially since copied labels may not be adequate.

Bulletin Number 24 is issued by DiCyan & Brown, Dept. CP, 12 East 41st Street, New York 17, New York. When inquiring specify CP 2745 on handy form, pages 2 and 3.

For more information on product at left, specify CP 2746 . . . see information request blank between pages 2 - 3.

"Most important development in stainless steel production in twenty years" report

Facilities for commercial production of a steel alloying material, considered to be one of the most important developments in stainless steel production in 20 years, are nearing completion at Marietta, Ohio.

Simplex ferrochrome is a chromium alloy used for making stainless steel and is offered in the form of pellets about the size of a walnut and resembling small clams in appearance and shape. Until now, the alloy has been available in merely pilot plant quantities. Four electric furnaces of radical design will put production on a commercial scale.

According to manufacturer, research leading to the development of Simplex ferrochrome took 10 years. The key factor was to produce a chromium alloy with virtually no carbon in it — actually the carbon is kept as low as 0.01% or one part in ten thousand. The pellets are said to melt more rapidly than conventional grades of ferrochrome.

Use of the new alloy is said to effect economies in production of extra-low-carbon stainless steels because of faster furnace operation. It also makes it possible to obtain greater overall recovery of chromium in the production of all grades of stainless steel.

(Simplex ferrochrome is a development of the Electro Metallurgical Company, a division of the Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, New York . . . or for more information check CP 2747 on handy form, pages 2 and 3.)

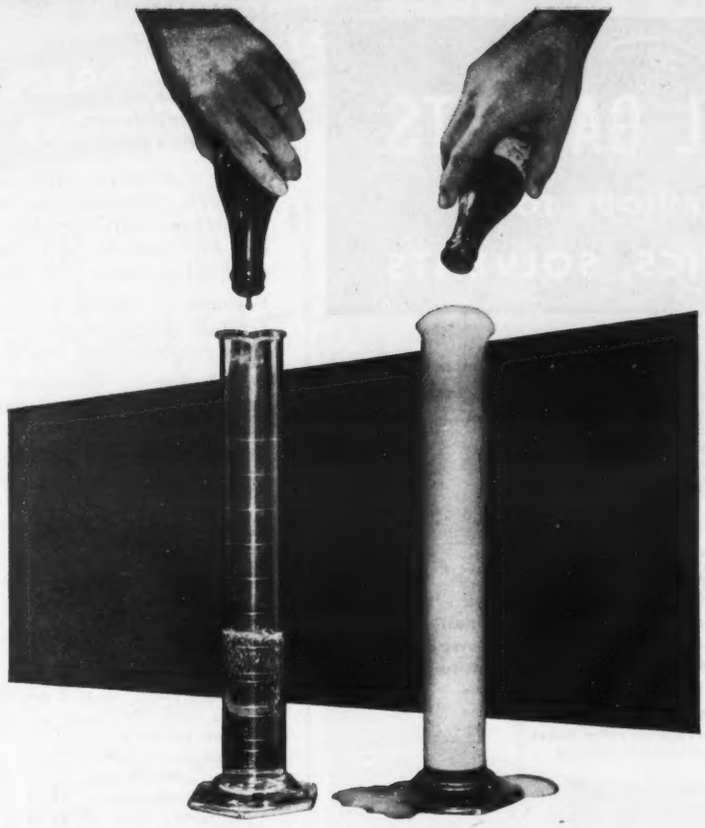
"Dry" formaldehyde opens new processes that can't tolerate water

A solid form of formaldehyde with less than one-tenth of one percent water content has been developed for processes where the presence of water inhibits or prevents reaction. Superfyde, as it has been named, is similar to paraformaldehyde in chemical structure, but has a higher molecular weight and higher melting point. It is suggested for use in applications where paraformaldehyde and other types of formaldehyde are not well adapted.

Superfyde should be of interest in the manufacture of resins and plastics because it reacts more slowly than paraformaldehyde at normal temperatures, yet reacts readily at elevated temperatures. It is most useful when very slow resinification is desired or when final hardening of the resin is accomplished by heating.

Product should also be of interest as a fumigant and fungicide, particularly in those uses where slow and controlled evolution of gaseous formaldehyde is important.

(Superfyde is a development of the Heyden Chemical Corporation, Dept. CP, 342 Madison Ave., New York 17, New York . . . or for more information check CP 2748 on handy Reader Service slip between pages two and three.)



Beaker at left: Club soda poured into empty container produces only a slight effervescence.

Beaker at right: Club soda poured into beaker containing a trace of pure glycyrrhizin (a licorice derivative) produces an abundant white foam.

***LICORICE**-stabilized foams are rich, white and durable*

If a rich, stable foam is necessary or desirable in any of your products or processes, *don't overlook licorice.*

All licorice extracts, including Flotite, a secondary extract, are prolific foam producers. Many licorice-stabilized foams are tough and durable – their tiny bubble structure remains stable in some systems for hours on end. Adequate knowledge of these facts might lead to substantial improvement in some product or process of your own.

The foam-producing characteristic of licorice—combined with its efficiency as a wetting, dispersing and conditioning agent—has aroused widespread interest in new uses and improved applications of both the primary and secondary extracts. Recent developments have launched a new wave of licorice research and prompted industrial concerns in a score of industries to start experimental work.

Other new and potentially valuable uses for licorice (without special emphasis on its foam-producing quality) are listed in the right-hand column. If anything in this list has even a remote association with your products or problems, or if the foaming quality of licorice interests you, it may pay us both to get together. Feel free to send for the informative material offered. A sample of one or more licorice products will also be sent if requested on your business letterhead, and without obligation.

Some New or Potential Uses for Licorice And Licorice Derivatives

Flotation agent in ore separation • Stabilizing acid latex • Component in feeds for horses, cattle and chickens • Soothing ingredient in cough syrups • Therapeutic agent in treatment of Addison's Disease • Soft drink flavor • Aging and mellowing smoking pipes • Prolonging foam in porter and ale • Improving meat and fish sauces Antioxidant to keep chewing gum fresh • Flavor for ice cream

Write today for your free copy of "The Story of Licorice." *We will mail it promptly. You're sure to find it interesting, and you might find it profitable as well.*

MACANDREWS & FORBES COMPANY
Licorice and Licorice Products • Since 1870
200 Fifth Avenue, New York 10, N.Y. ***Plant:*** **Camden, New Jersey**

When inquiring check CP 2749 on handy form, pgs. 2-3

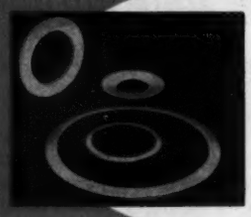
CHEMISEAL GASKETS

ARE IMPERVIOUS TO

ACIDS, CAUSTICS, SOLVENTS

"Teflon's inertness to all chemicals, excepting molten sodium and fluorine, has become so well known that Chemiseal Gaskets have become standard for corrosion and contamination problems throughout industry.

Chemiseal Teflon-jacketed gaskets are available in any size, with a variety of filler materials suitable for glass, glass-lined, porcelain-lined, Carbate, Haveg or metal piping and equipment. These fillers are protected on both faces and the inside diameter by the chemical resistant Teflon jacket.



Solid Teflon cut gaskets are available either as ring or full face gaskets for all standard pipe sizes or for irregular shaped openings. Solid Teflon gaskets 1/16" thick generally can be used wherever a 1/16" compressed asbestos gasket would be mechanically suitable.

Sheet Teflon for cutting your own gaskets for field emergencies, is available in thicknesses from 1/16" and in standard sheet sizes up to 36" square. Write for catalog or send blue prints for special gasket requirements.

UNITED STATES GASKET COMPANY

FLUOROCARBON PRODUCTS DIVISION

FABRICATORS OF "TEFLON", KEL-F AND OTHER FLUOROCARBON PLASTICS

CAMDEN 1, NEW JERSEY

"Teflon" is trademark for its tetrafluoroethylene resin

When inquiring check CP 2750 on handy form, pgs. 2-3

MATERIALS

Plasticizes all types of vinyls, cellulosics, synthetic rubbers

Uses: Primary plasticizer for use in all types of vinyls, cellulosics, and synthetic rubbers. Applicable to vinyl calender sheeting, calender and cast film, calender and dispersion coated fabrics, extruded products, and plastisol formulations.

Features: Reported to impart good low-temperature properties to nitrile and GR-S rubbers, and cellulosics.

Description: Plastolein 9057 DIOZ (di-iso-octyl azelate) is the latest addition to maker's line of monomeric and polymeric plasticizers. It is similar enough in performance di-2-ethylhexyl azelate (Plastolein 9058 DOZ) that the two can be used interchangeably. Product is a water white liquid with the following specifications and physical properties:

Acid number, mgm KOH/gm	1.0 max
Color, Lovibond (5¼" cell)	3.0 Y/1.0 R max
Hydroxyl value	4.0 max
Appearance	clear at 15°C
Acidity, % HAc	0.11
Boiling point, °C at 5 mm Hg	235
Fire point, °F	465
Flash point, °F	415
Molecular weight	412
Pour point, °F	below −75
Solidification point, °F	below −75
Refractive index at 25°C	1.448
Viscosity, SUV Seconds at 30°F	84.3
Viscosity, SUV Seconds at 110°F	40.1
Volatility (%) 1 hr at 105°C	0.72
Volatility (%) 5 hr at 105°C	0.97
Specific gravity at 20°C	0.92
Pounds per gallon at 20°C	7.65

(Plastolein 9057 DIOZ is a product of Emery Industries, Incorporated, Dept. CP, Carew Tower, Cincinnati 2, Ohio . . . or for more information check CP 2751 on handy form, pages 2 and 3.)

Retains 80% sorptive capacity for drying natural gas after twenty months operation . . .

activated alumina desiccant owes its high physical strength to special balling process

Uses: Desiccant for drying natural gas.

Features: High sorptive capacity and stability result from the ball form of this specially prepared amorphous gel of activated alumina. The balling process contributes high physical strength.

Description: H-151 desiccant was compared in a 2-year field test with conventional gel-type desiccants in a twin-tower dehydration unit used for drying natural gas. Results showed that the *initial* sorptive capacities were practically identical. However, it was found that the rate of decline in capacity for H-151 activated alumina was much smaller than for the other desiccants tested.

At the end of 6 months of operation H-151 showed little evidence of particle breakdown, whereas the

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Use productive capacity now wasted on foam; cut processing time with Dow Corning Antifoam A, the silicone defoamer that works at concentrations in the range of:

3 ppm ◊ in recirculating cooling brines
2.5 ppm ◊ in bottling soft drinks
2 ppm ◊ in varnish cooking
200 ppm ◊ in textile resin backings
0.4 ppm ◊ in steel pickling baths

◊ Effective at remarkably low concentrations in a wide variety of foamers, Dow Corning Antifoam A compound is harmless physiologically. It can be used as received, mixed with one of the foaming ingredients or dispersed in a solvent for industrial applications.

◊ Equally versatile and more easily dispersed, Dow Corning Antifoam AF Emulsion is a water dilutable defoamer containing 30% Antifoam A. Originally designed for use in the food processing industries, Dow Corning Antifoam AF Emulsion has a wide field of industrial usefulness.

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Midland, Mich., Dept. BB-8

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☐ Dow Corning Antifoam AF Emulsion

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COMPANY_____

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CITY_____ ZONE____ STATE____

When inquiring check CP 2752 on handy form, pgs. 2-3

other desiccants are reported to have shown excessive breakdown. After 20 months of operation H-151 had an 80% greater sorptive capacity than the better of the other materials.

A design figure of 12-12.5% sorptive capacity for H-151 can be applied for conditions similar to those described in this test.

(H-151 activated alumina desiccant is a development of the Aluminum Company of America, Dept. CP, 801 Gulf Building, Pittsburgh 19, Pennsylvania . . . check CP 2753 on form, pages 2 and 3.)

Initiate production of trihydric alcohol — trimethylol ethane . . .

expected to make new alkyd resins possible, and improve existing surface coatings

Production has begun for trimethylol ethane (TME), a trihydric alcohol which is reported to have numerous advantages over glycerine — the only other trihydric alcohol commercially available. TME will make possible new alkyd resins and improvement in existing types of surface coatings, particularly those where glycerine is now used.

Because all of TME's hydroxyl groups are primary, alkyd manufacturing is said to be speeded up and stability and durability of alkyds are enhanced.

(TME is being produced at the Garfield, New Jersey plant of Heyden Chemical Corporation, Dept. CP, 342 Madison Avenue, New York 17, New York . . . or for more information check CP 2754 on handy form, pages 2 and 3.)

New catalyst and new process for reforming naphthas into hi-octane gasoline

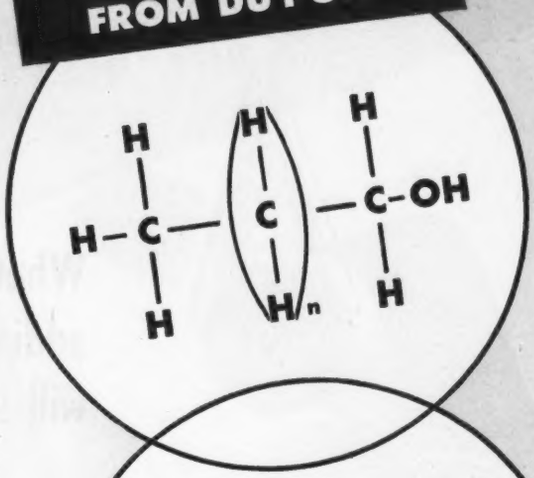
Announcement of an agreement among the Sinclair Refining Company, Baker and Company, Inc., and The M. W. Kellogg Company was recently made whereby Kellogg will offer Baker's new platinum catalyst in a new process for the reforming of naphthas into high-octane gasoline.

The catalyst, designated RD-150, was developed through cooperative research by Sinclair and Baker. It is a regenerative type catalyst and has two major advantages over existing commercial platinum catalysts: 1) It maintains high activity over considerably longer periods of time, resulting in substantially lower catalyst operating costs, and 2) It has greater ability to convert low-octane paraffin components to high-octane aromatic gasoline.

Furthermore, Sinclair pilot runs indicate that the catalyst can produce excellent yields of high-octane product from a wide variety of feed stocks. In connection with the catalyst's long life, Sinclair and Baker point out the important economic fact that the process shows a decided superiority in barrels of feed stock processed per-pound-of-catalyst-consumed.

(Baker and Company is producing RD-150 in its Newark, New Jersey plant.)

IDEA-CHEMICALS FROM DU PONT



"LOROL"* FATTY ALCOHOLS

Can be esterified with acids in the presence of a catalyst.

Can be oxidized to give the corresponding aldehydes. Further oxidation yields the acids.

Can be dehydrated over an aluminum oxide catalyst to yield corresponding olefins.

Are non-corrosive.

Here are versatile straight-chain alcohols you should investigate

Du Pont "Lorol" fatty alcohols have wide applications as chemical intermediates and emulsifying agents. Available in six grades, "Lorol" fatty alcohols feature: controlled hydroxyl numbers ranging from 260 to 440; controlled maximum iodine, acid and ester numbers; and a high degree of uniformity as insured by careful redistillation during the manufacturing process.

Among other important uses in industry, "Lorol" fatty alcohols have become valuable helps in the manufacture of pharmaceutical and cosmetic products and find useful application in the petroleum, rubber, textile and leather industries.

Why not investigate the use of "Lorol" fatty alcohols in your business? We'll be glad to send you more information on these versatile, high-quality alcohols—specifications, properties, suggested uses. Just clip the coupon below, or write on your letterhead today. E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.

GRADES AND AVAILABILITY: Six grades of "Lorol" fatty alcohols are available, shipped in 8,000-gallon tank cars or 55-gallon drums—except as stated otherwise:

"Lorol" 5 and 7, mixtures made up principally of lauryl and myristyl alcohols.
"Lorol" 20, normal octanol.
"Lorol" 22, normal decanol.
"Lorol" 24, normal cetyl alcohol (shipped in 140-lb. fiber drums—minimum carload lot: 30,000 lb.).
"Lorol" 28, normal stearyl alcohol.

("Lorol" 28 is available in U. S. P. Grade: 50-lb. fiber drums; and Industrial Grade: 50-lb. bags.)

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E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department 588, Wilmington 98, Del.

Please send me more information on "Lorol" fatty alcohols—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating "Lorol" alcohols for the following applications:

_____

_____

Name _____ Title _____

Firm _____

Address _____

City _____ State _____

When inquiring check CP 2755 on handy form, pgs. 2-3

ARE YOU MISSING A CHANCE TO MAKE IT BETTER AT LESS COST

Scores of industries have successfully applied our [illegible] developed forest products to their manufacturing processes, often resulting in important improvements and economies. It may pay you to investigate.

SILVACEL Industrial Fibers

SILVACEL can be manufactured to specifications involving an almost endless variety of chemical and physical mixtures — and produced in automatically controlled plants. A few current uses are:

Filters—Paper & Fill Types
Insulation—Low Temperature, Water Heater & Building
Paper Stock—Saturating and Specialties
Pulp Molding
Battery Separators
Oil Well Drilling

SILVACON* Bark Fractions

A few current uses of Silvacon Bark Fractions are

Phenolic Glue Extension
Phenolic Molding Compounds
Asphalt Products
Insecticides
Magnesite Flooring
Rubber Products
Wadding
Foundry Sands
Seed Cleaning
Fertilizers
Thermoplastics
Oil Well Drilling

*T. M. REG. U. S. PAT. OFF.

Write for samples and technical data

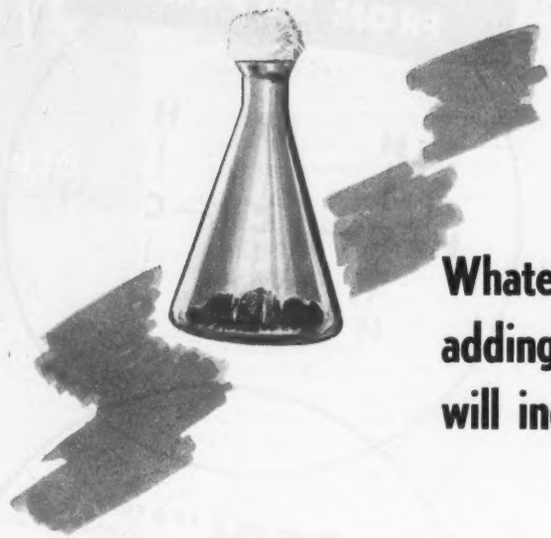
Field engineering service on request

Special Products Division

WEYERHAEUSER TIMBER COMPANY

Tacoma, Washington

When inquiring check CP 2756 on handy form, pgs. 2-3



Whatever the biological process, adding the right micro-organism will increase efficiency

Tailor-made cultures are for treatment of sewage and wastes such as oils, phenols and aldehydes, citrus by-products, etc.

BIOLOGICAL activity of sewage and industrial waste treatment plants can be improved, and the capacity of the plants as they are, can be increased through the use of Bionetic — a dry, free flowing, stable powder consisting of preserved living micro-organisms from natural sources together with enzyme systems and trace minerals. There is a specific formulation of Bionetic which includes the required organisms and stimulating biological factors to improve efficiency and increase the capacity of each treatment process.

For Digestors

Type I Bionetic consists of preserved living cultures of select anaerobic organisms, activating factors from mold sources, potent aerobic digesting organisms, together with enzyme systems and other undefined bio-catalysts.

It is reported that sludge digestion will be improved and accelerated, odor, suspended solids, and BOD of the supernatant will be reduced; and digestion will be upgraded to the most efficient range.

For Imhoff Plants

Type II Bionetic consists of preserved living cultures of select anaerobic organisms, aerobic groups with specific ability to flocculate sewage, activating factors from mold sources, together with enzyme systems and other undefined bio-catalysts.

All biological factors are said to be so combined to produce rapid settling and to accelerate the rate of sludge digestion.

Type III Bionetic consists of preserved living cultures of selected aerobic forms, for the rapid production of floc to accelerate settling rate, together with an activating factor from mold sources and all their enzyme systems.

It is produced symbiotically with anaerobic forms to promote digestion when sludge is transferred to a digestor. In plants where separate sludge digestion is not employed, the sludge will not be affected because the anaerobes will not act on it.

For Biofilters or Trickling Filters

Type IV Bionetic consists of preserved living cultures of selected aerobic organisms to promote rapid settling, activating factors from mold sources, and all their enzyme systems. This culture is also produced symbiotically with anaerobic forms to promote digestion when sludge is transferred to a digestor.

All biological factors are combined to increase settling rate, to reduce BOD and suspended solids in the effluent, and accelerate digestion. If no separate sludge digestion is employed, anaerobic forms will remain dormant.

Type V Bionetic consists of the same type of preserved living culture used in digestors together with a special aerobic form to improve settling. It is the same as Type II and will improve and accelerate

the digestion of solids so that plugging of tile by solids carry-over will not occur.

The Bionetic may be flushed directly into a tile from a distribution box to remove solids carried into effluent distribution areas. Time span between cleaning of septic tanks may be lengthened almost indefinitely with the use of Bionetic, maker reports. Where septic tanks are subject to inorganic solids, sand and grit, etc., it may be necessary to clean them after a period of years.

Custom Cultures for Industrial Waste Treatment

Type XX Bionetic cultures are tailor-made for treating a wide variety of specific waste products. As an example, maker is currently engaged in the preparation of cultures for decomposing oil in refinery waste waters, breaking-down phenols and aldehydes, for handling wastes from citrus processors, and many more. In general, wherever biological processes are involved, Bionetic cultures are said to greatly improve efficiencies.

Additional Notes

Three factors included in the formulation of Bionetic cultures enhance biological processes regardless of the purpose of the process: 1) *synergism,* relationship between two or more groups of organisms working together to produce an effect greater than either group could accomplish alone. 2) *Symbiosis,* relationship between different groups of organisms working together to assist each other. 3) *Number of organisms,* the numerical quantity as well as coordinating groups of organisms determine the speed and amount of product from a biological process.

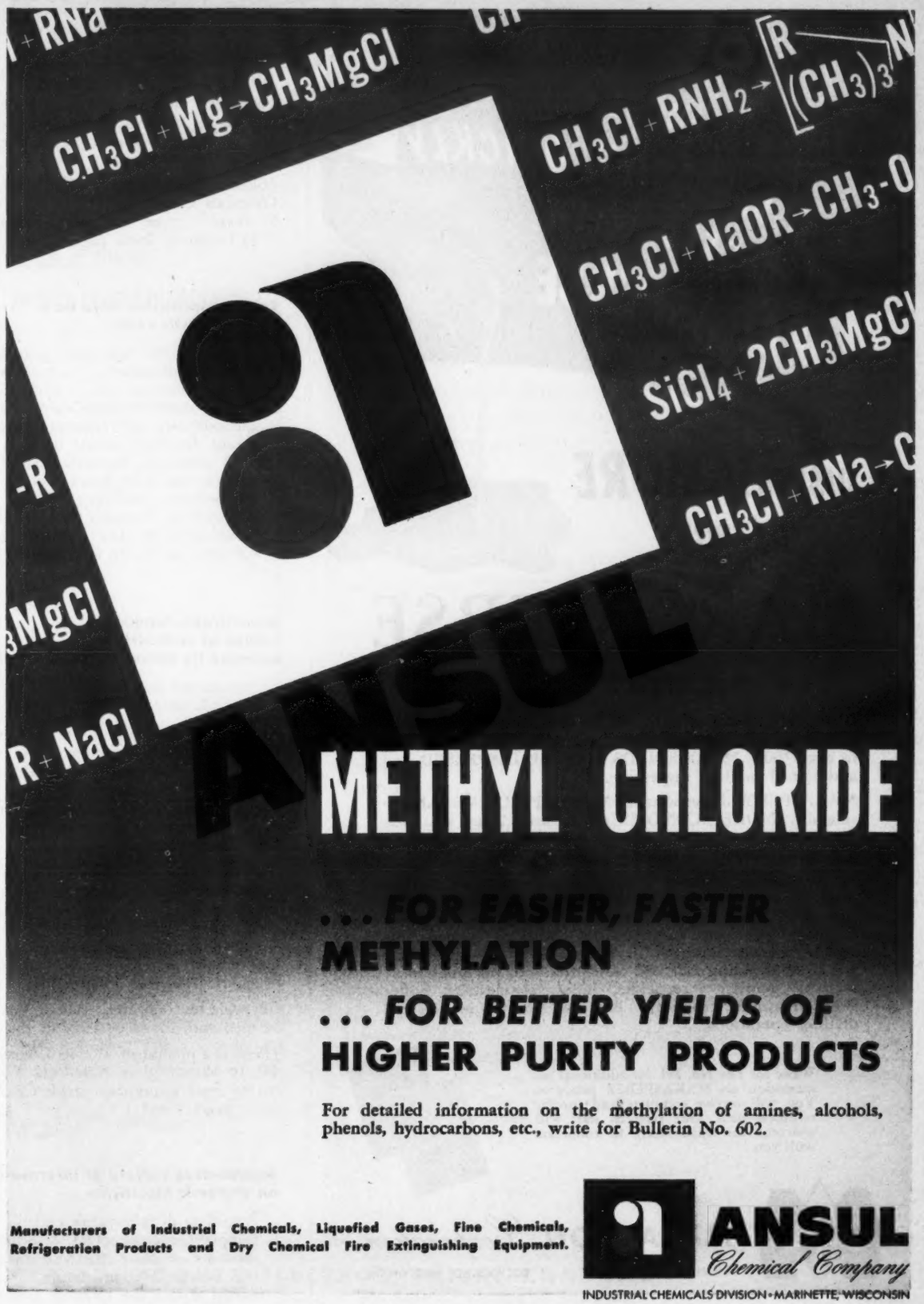
The cultures will reproduce themselves. For instance, an organism that lives with little or no oxygen will not live in that part of the process where maximum oxygen concentration is present. It will remain dormant until it reaches that part of the process conducive to reproduction.

If a culture is selected to effect the entire plant, the Bionetic may be fed at the raw influent, preferably after the grit removal chamber. Feed can be manual or proportional to flow. Application to a sludge digestor can be made manually, preferably between sludge withdrawals in order to get maximum time for reaction. In trickling filter plants, it may be more desirable to feed into the distribution box directly into the filter where influence on filter performance is required. Method of application is of prime concern for each specific plant.

Because of the reproductive nature of Bionetic cultures, only small additions of fresh culture are required from time to time. In some instances, residual values have lasted for extended periods without any additions.

Release of petroleum from oil-bearing sands is a possibility. Rapid withdrawal of oil in some cases takes micro-organisms and enzymes with it, causing a deficiency in biocatalytic agents that form gases and remove oil from wells.

(*Continued on next page*)


CH3Cl + Mg → CH3MgCl
CH3Cl + RNH2 →
CH3Cl + NaOR → CH3-O
SiCl4 + 2CH3MgCl
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When inquiring check CP 2757 on handy form, pgs. 2-3

DISPERSE MORE SOLIDS WITH

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MARASPERSE dispersants are MORE EFFECTIVE and considerably MORE ECONOMICAL to use. They are completely soluble in water; are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 701 for additional information on MARASPERSE products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.

MARATHON *Corporation*

CHEMICAL DIVISION • ROTHSCHILD, WISCONSIN

When inquiring check CP 2758 on handy form, pgs. 2-3

MATERIALS

(Continued from preceding page)

Conclusive proof is lacking, but sulfur formation may be due to the action of sulfate-reducing organisms on gypsum. This might conceivable offer future use for custom cultures.

(Bionetic cultures are products of the Reliance Chemicals Corporation, P. O. Box 6724, Houston 5, Texas . . . or for more information check CP 2759 on handy form, pages 2 and 3.)

Latest application data on a thermoplastic resin

A hard, brittle, high-melting thermoplastic resin, Vinsol, is discussed in 12-page bulletin and the latest information on its applications presented. A table shows its solubility or compatibility with approximately 200 different materials. Uses of Vinsol described include those in adhesives, asphalt emulsions, hydraulic cement, electrical insulation, ink, shoes, floor coverings, paper, plastics, and protective coatings. "Vinsol, 1953 Edition" is issued by Hercules Powder Co., Dept. CP, Wilmington 99, Del. When inquiring specify CP 2760 on handy form, pages 2 and 3.

Insecticidal, fungicidal values of rodenticide enhance its value . . .

cereal-type bait remains fresh and clean; rodents eat till destroyed

An anti-coagulant rodenticide with insecticidal and fungicidal properties is currently being offered following a year of comprehensive field and laboratory testing under an experimental permit of the Production and Marketing Administration of the USDA. Pival (2-pivalyl-1,3-indandione) is available as a 0.5% concentrate.

Used in cereal baits at a concentration of only 1 part in 4000, its lethal action depends on continued eating over a period of several days. Tasteless and odorless, it creates no "bait shyness" in rats and mice. Pival is said to keep bait fresh and inviting to "fussy eating" rats by preventing insect infestation and onset of mold. They feed on the bait until destroyed.

City-wide test campaigns indicate that Pival bait can be used with complete saftey by the general public.

(Pival is a product of Motomco, Incorporated, Dept. CP, 10 Murray Street, New York 7 , New York. . . or for more information check CP 2761 on handy form, pages 2 and 3.)

Summarizes variety of information on systemic insecticide

According to informative bulletin on octamethylpyrophosphoramide (OMPA, Schradan), systemic toxicants are more effective than superficial coatings because of translocation to parts which are missed during the spraying operation. Systemic toxicants are compounds which, upon application,

YOUR BIG NEWS IN PIGMENTS--WILLIAMS NEW KROMA RED!

Gives a far brighter mass color, much cleaner tint, is more easily dispersed than any red iron oxide pigment yet produced!

MEANS THAT YOU CAN NOW USE A LOW COST IRON OXIDE PIGMENT FOR WORK WHERE MORE BRILLIANT COLORS ARE REQUIRED FROM LIGHT RED TO DEEP MAROON

Chemical and Physical Properties

Fe_2O_3	95.0% MIN.
Sp.G.	4.80
Oil ABS.	21-22
Hiding SQ. FT. per LB.	850-1,000

KROMA RED APPLICATIONS:

Toy and furniture enamels
House and barn paints
Floor enamels
Resin and latex emulsion paints
Automotive finishes
Camouflage (high infrared reflectance)
Rubber products
Plastics
Textile finishes
Floor coverings
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. . . and many other uses.

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108 SHADES AND TYPES OF IRON OXIDE PIGMENTS

When inquiring check CP 2762 on handy form, pgs. 2-3

are absorbed by a plant and distributed throughout the plant system. Once inside the plant, rainfall or sprinkler irrigation cannot wash away the toxicant.

Bulletin emphasizes the need to handle the highly toxic chemical (OMPA) with extreme caution and includes a section on storing, handling and formulating of OMPA and other organic phosphates. In addition, it contains information about the application and effectiveness of the chemical as well as sample formulations for aerosol mixtures, liquid formulations and emulsifiable concentrates.

Bul ODB 53-11 is issued by Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. When inquiring specify CP 2763 on handy form, pages 2 and 3.

For labeling, laminating polyethylene . . .

emulsion adhesive has good adhesion, water resistance, fast grab, stability

Uses: Emulsion adhesive for bonding polyethylene to paper, aluminum foil, and to nonporous surfaces. Being employed for attaching labels to polyethylene bottles and for manufacture of wrap materials for the Armed Forces.

Features: Excellent adhesion, water resistance, fast grab, and good emulsion stability are reported.

Description: Arcco 980-21D polyethylene adhesive can be thinned with water if a lower viscosity for roll-coating is desired. It also applies by conventional spreader equipment or by brush.

For laminating non-porous surfaces, surface is given approximately a 3-mil coat, force-dried by heating, and then combined with the polyethylene with slight pressure while the adhesive film is still hot.

(Product of the American Resinous Chemicals Corporation, Dept. CP, 103 Foster Street, Peabody, Massachusetts . . . or for more information check CP 2764 on handy form, pages 2 and 3.)

Solvent, intermediate uses told for butyrolactone

Recently announced is the availability of butyrolactone in tank-car quantities. Material, structurally the inner ester of gamma-hydroxybutyric acid, is a chemical intermediate for preparation of aliphatic and cyclic compounds, for methionine synthesis, and for making n-alkylpyrrolidones. Solvent applications are indicated because it is a liquid from 44 to 204°C. Specifically, it is of special utility as a solvent for acrylonitrile and other high polymers, and as a selective solvent for acetylene in natural and other gases.

(Samples and technical information are available from maker, Commercial Development Dept., General Aniline & Film Corporation, Dept. CP, 435 Hudson Street, New York 14, New York . . . check CP 2765 on handy form, pages 2 and 3.)

Hooker Chemical Guide (ONE OF A SERIES)

USE this handy reference to save time in selecting high quality chemicals.

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CAUSTIC SODA

50% LIQUID	FLAKE
73% LIQUID	SOLID

Used in these products and processes:

wood pulp
soap
glass
chemical intermediates
phenol
resorcinol
naphthol
oxalic acid
indigo
sodium salts
pigments
aniline dyes
ceramics
pharmaceuticals
cosmetics
viscose rayon
cleaning compounds
reclaiming rubber
mercerizing cotton
reclaiming tin
food processing
reclaiming paper
metal ore refining
bleaching textiles
petroleum refining
dyeing textiles
engraving
printing textiles
lithography
water softening
and many, many others

DEPENDABLE DELIVERIES

When you order chemicals from Hooker, you know that you are dealing with a reputable, dependable supplier. You can count on prompt deliveries, timed to fit your production schedule.

GROWING...TO SERVE YOU BETTER

New Chicago Office—To better serve Midwestern chemical users, Hooker has recently opened an office at 1 North LaSalle Street in the heart of Chicago's Loop. Midwestern users need only call Chicago, CEntral 6-1311, to receive fast shipment from the main plant at Niagara Falls. Hooker technical personnel will also be stationed at the Chicago office to assist you with your chemical requirements.

New plant at Montague, Michigan—In addition to the existing plants at Niagara Falls and Tacoma, Hooker is building a plant at Montague, Michigan which will increase chlorine and caustic soda production by 100,000 tons per year. Construction will be completed in 1953. This plant will further speed deliveries to Midwestern users.

Research and development—Over 100 regular products, and many more research products, have been made available through Hooker's specialized experience in chlorination, hydrogenation, esterification, sulfhydration, hydrochlorination, and fluorination. Complete laboratory and pilot plant facilities are ready to serve you.

Products available now—Chlorine, muriatic acid, sodium sulfide, chlorobenzenes, and many other products are available for immediate shipment. For full information, write on your letterhead to *Hooker Electrochemical Company*, 15 Forty-Seventh Street, Niagara Falls, N. Y.

From the Salt of the Earth

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When inquiring check CP 2766 on handy form, pgs. 2-3

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manufactures: stearates • vinyl stabilizers • esters • paint driers • sunolite® wax asphaltic mastics, etc.

Thorough care in manufacture assures highest purity and uniformity.

Technical assistance in the use of these products is yours for the asking.

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Aerial view of Witco's Chicago plant. Other Witco plants at Brooklyn, N. Y., Lawrenceville, Ill., Perth Amboy, N. J., and Eunice, N. M.

Offer carboxy group on each of 4 C-atoms . . .

1, 2, 3, 4-tetracarboxybutane melts at 189-192°C

Uses: Resins — compound reacts with polyhydric alcohols forming resinous products having alkyd characteristics. By reacting compound with unsaturated alcohols, such as alkyl alcohol or butynediol a large number of resinous materials with diversified properties will result.

Plasticizers — increased functionality of compound of interest in this use.

Adhesives — by reaction with unsaturated alcohols resinous products will form which can be used as adhesive resins.

Modified & Synthetic Oils — by proper reaction with pentaerythritol, diglycerol, sorbitol, inositol and unsaturated intermediates, hard, complex fast drying films should result.

Wetting Agents & Detergents — will react with long chain alcohols to produce compounds of high surface activity. By reaction with dihydric alcohols such triethylene glycol various modifications may be performed.

Esterification catalyst — use here has been suggested because of its high acid strength.

Description: 1, 2, 3, 4-Tetracarboxybutane is a pale yellow to a white powder having a melting point of 189-192°C.

(Announced by Jasonols Chemical Corp., Dept. CP, 1085-87 Myrtle Ave., Brooklyn 6, N. Y. . . . or for more data check CP 2767 on form, pages 2 and 3.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

For more information on product at left, specify CP 2768 . . . see information request blank between pages 2 - 3.

Softener also imparts anti-static values to textiles . . .

especially effective agent for materials to be heavily weighted with urea or sugars

Uses: Anionic softener for use on cotton, acetate, viscose, and all synthetics.

Features: Produces a soft hand on cotton, acetate, viscose rayons, and nylon. Reported to be an effective softener on knit cottons and rayons which are to be heavily weighted with urea or sugars. Contributes some anti-static characteristics.

Description: Atanol BS consists of sulfonated waxes and sulfated alcohols, and is in the form of a light cream-colored paste. Application may be either by pad, quetsch, or tube-tex machine.

For most work, 2-3% of Atanol BS on the weight of the goods is satisfactory. For heavily weighted fabrics, larger quantities may be advisable.

Product is readily soluble in water of at least 140°F. The pH of a 0.1% solution is 7-7.5. It resists solutions of dilute acids and alkalis, and is compatible with starches, dextrines, sugars, gums, and urea. It neither discolors whites, even on long standing, nor affects light fastness of colors.

(Product of the Dexter Chemical Corporation, Dept. CP, 819 Edgewater Road, New York 59, New York . . . check CP 2769, pages 2 and 3.)

2-3 times better flatting of urea alkyd varnishes with synthetic silica . . .

maker also reports large amounts can be ground easily in single mill charge

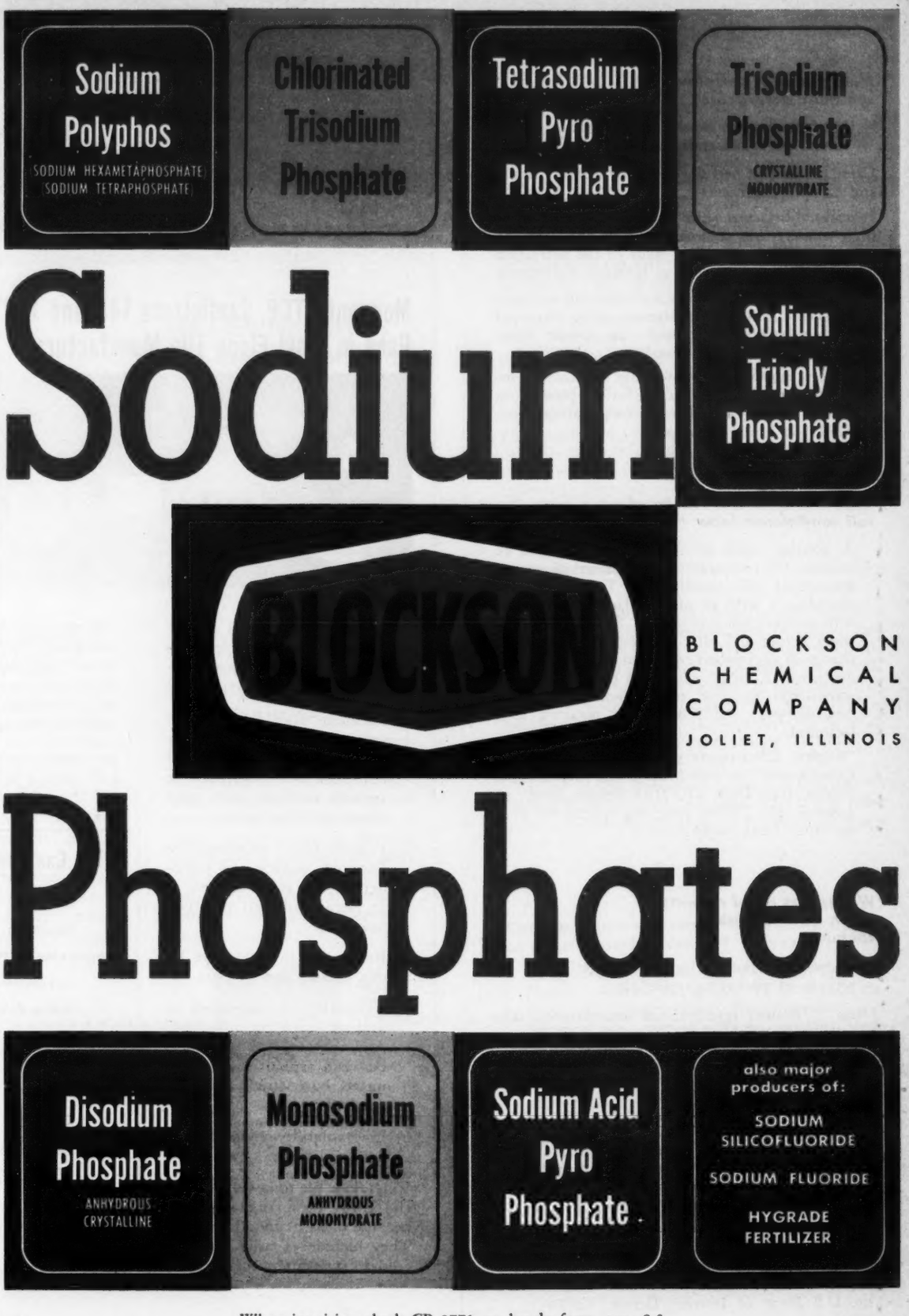
Uses: Synthetic silica for flatting alkyd-urea type varnishes. Gives an effective matte or hand-rubbed effect in varnishes, as desired.

Features: Laboratory tests by maker indicate that large amounts of the agent can be ground easily in a single mill charge. Chemical purity is high, and physical properties are controlled to assure uniformity. Resultant films are said to be tough, durable, and mar-resistant.

Description: Syloid 162 (also known as PD 162) is, according to maker, 2-3 times as efficient in flatting alkyd-urea varnishes as natural silica or the aerogels. Since the synthetic silica gels are not heat sensitive, there is very little tendency for films to burnish on rubbing. Specifications are tabulated below:

Color	white, transparent in vehicles
Appearance	uniform, free-flowing powder
Particle size	4.5-6.5 microns radius
Dry bulk density	23 lb/cu ft compacted
Bulking value	0.0606 solid gal/lb
Oil absorption	145

(Syloid 162 is a product of the Davison Chemical Corporation, Dept. CP, 101 N. Charles St., Baltimore 3, Maryland . . . or for more information check CP 2770 on handy form, pages 2 and 3.)



When inquiring check CP 2771 on handy form, pgs. 2-3

Masks odor of petroleum in synthetic detergents . . .

perfume base is capable of withstanding high temps of manufacturing processes

Uses: Line of perfume bases for scenting liquid and powder detergents.

Features: Designed to withstand the unusually high temperatures of manufacturing processes and to mask even the tenacious odor of the petroleum base most frequently used in synthetic detergents.

Description: Deteromes are available in many fragrances. In liquid detergents, ⅛-¼ ounce of odorant is generally employed. In powder detergents, ⅛-¼% odorant is used.

(Deteromes are a product of Dodge & Olcott, Incorporated, Dept. CP, 180 Varick Street, New York 14, New York. . . or for more information check CP 2772 on handy form, pages 2 and 3.)

Report summarizes results of soil conditioner tests

A detailed series of tests were undertaken to evaluate the comparative performance of several commercial soil conditioners. Tests were conducted on a series of plots of land in accordance with accepted test procedures. Soil samples were taken before and after the test to measure the change in aggregation by the addition of the conditioners. A table included in the report which summarizes the test results indicates the per cent of water stable aggregates obtained after treatment.

"Relative Effectiveness of Various Chemical Soil Conditioners" is issued by Doane Agricultural Service, Inc., Dept. CP, 5144 Delmar Blvd., St. Louis 8, Mo. When inquiring specify CP 2773 on handy form, pages 2 and 3.

Wrappings repel rodents when treated with chemical . . .

repels on taste principle; suggested for all types of packaging materials

Uses: Rodent repellent for incorporation into packaging materials of all types. Such packaging materials are especially recommended for human and animal foodstuffs in shipment to prevent their loss from rodent attack.

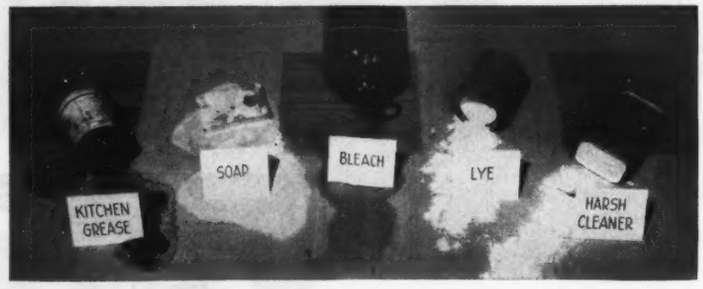
Features: Product is odorless and repels on a taste principle. It is compatible with most synthetic resins, starches, pigments, dyestuffs, oils, and may be used in any conventional coating, binder, or size now used by the paper, textile, twine, or adhesive industries.

Description: Good-rite z.a.c. (zinc dimethyl dithiocarbamatecyclohexylamine complex) was put through several years of active testing at the Wildlife Research Laboratory, Fish and Wildlife Service, U.S. Dept. of Interior, Denver, Colo.

for your information...

brief summaries of helpful product news

Monsanto TCP, Santicizers 140 and 160 Used in Vinyl Floor Tile Manufacture



Vinyl floor covering is getting important help from three Monsanto plasticizers. Monsanto Santicizers* give these advantages:

1) Excellent filler and pigment wetting by these plasticizers permits use of highly filled compositions resulting in smooth surfaces with good mottling characteristics.

2) Provide faster processing in Banbury, milling and calendering operations as well as in organosol and plastisol fusion.

3) Resistance to extraction by oils, greases and solvents.

4) Resistance to migration of asphalt emulsion adhesives. And resistance to migration between asphalt in impregnated base stock and the vinyl tile.

5) Low volatility and excellent light resistance.

Vinyl floor tile today is sparking the floor covering business because of its many advantages. They include: a wide range of colors, resistance to alkalies, bleaches and abrasion, and great resiliency. This tile resists indentation and provides a springy walking surface. Its natural gloss is such that only a minimum of polishing is necessary.

Fumaric Acid Available In Commercial Quantities From Monsanto

Surface coating, polyester resin and printing ink manufacturers got a new source of supply of Fumaric Acid when Monsanto recently announced production of the product in commercial quantities.

Chief advantages of Fumaric Acid are:

High melting point. May be processed at high temperatures with minimum loss.

Extremely low order of toxicity.

Noncorrosive to materials normally used in resin making equipment.

Fumaric Acid is a companion material to phthalic and maleic anhydride. It is used in much the same manner as maleic anhydride but due to its higher melting point Fumaric Acid results in a higher softening resin. In ink manufacture, such as in steam-set printing inks, this is a particular advantage. In resins, Fumaric Acid is used in the modification of phthalic-type alkyds, straight fumaric alkyds, in the upgrading of drying oils and in

The Research Chemist's Corner

What Can You Do With This Product?

HEXAMETHYLPHOSPHORAMIDE

Formula: $[(CH_3)_2N]_3PO$ **Mol. Wt.** 179.2

Approximate Properties:

Appearance:	Clear, colorless, mobile liquid
Boiling Point:	66° C. at 0.5 mm. H.G. 98-100° C. at 6.0 mm. Hg.
Crystallization Point:	approx. 4° C.
n_D^{25}	1.4570
Odor:	Spicy
Specific Gravity:	1.024 at 25°/25° C.
Wt. per U. S. Gallon:	8.55 lbs. at 25° C.
Solubility:	Soluble in benzene, heptane, carbon d'sulfide, carbon tetrachloride, ethanol, methanol, acetone, ethyl ether, water, ethyl acetate.

the formation of adducts with rosin and terpenes.

As a raw material in the manufacture of polyester resins, it serves as the unsaturated dibasic acid-building block for both addition and condensation polymerization which results in these materials becoming infusible and insoluble on curing. Another use is as the acidulant for gelatin replacing citric or tartaric acid.

FUMARIC ACID

Formula: HC-COOH
‖
HOOC-CH

Mol. Wt.: 116.07

Approximate Properties:

Appearance:
White fine granular crystals

Melting Point:
286-287° C. (sealed tube)

Boiling Point:
290° C. (sublimes)

Specific Gravity @ 20°/4° C.
1.635

Solubility in H_2O
0.70 gms. per 100 ml. at 25° C.
9.8 gms. per 100 ml. at 100° C.

Solubility in Alcohol:
5.75 gms. per 100 ml. at 29.7° C.
4.76 gms. per 100 ml. at 76° C.

Solubility in Ether:
0.72 gms. per 100 ml. at 25° C.

For data sheet, price information and sample, check the coupon.

Highway Marking Paints Improved by Use of Aroclors

Monsanto's Aroclors,* chlorinated biphenyls and polyphenyls, are proving their worth daily when used in chlorinated rubber-base coatings for highway marking.

These coatings, with their exceptional properties, are also used for protecting concrete structures, stucco walls, marine equipment, steel structures and many other materials.

Aroclor 1254 is outstanding as a plasticizer in formulations for these applications. Another Aroclor, 1260, also improves rubber-base coatings by acting as a fortifier, providing greater resistance to corrosion, alkalies, chemicals and weather.

For complete information on the use of Aroclors send the coupon for Bulletin P-126.

PHOSPHATE BAGS — COLOR-CODED

As another step forward in its program to ease material handling problems for customers, Monsanto now color-codes all bags of sodium phosphates.

Customers will find the new bags have several important advantages. Handling time is saved and the chance for error in picking the wrong bag because of poor identification is eliminated. Inventory problems are simplified. Stock on hand can be approximated at a glance.

These advantages are the result of a very careful study of package design coupled with an understanding of what the customer wants. The new bags have the name of the product clearly printed on them and each phosphate is represented by a different color, displayed on the face and the gusset of the bag. This color indication provides for quick identification with the bag in practically any position.

New Fields For Adhesives With Monsanto Isocyanates

Want an exceptionally strong and durable adhesive for rigid materials?

Monsanto isocyanates are your answer. These products are ideal for making adhesives that bond aluminum to aluminum, glass to aluminum, glass to metals, ceramics to metals and polyester glass fiber to polyester glass fiber.

Such compounds as tolylene diisocyanate can be reacted with polyfunctional hydroxyl compounds to produce easy-to-apply adhesives which require only slightly elevated temperatures and nominal pressures for curing.

Because of these advantages, adhesives made with Monsanto isocyanates can be used in many new ways. Already such applications as sealing side seams of "tin" cans, cementing glass to aluminum in casement windows and bonding aluminum to aluminum in aircraft show great promise. For more information mail the coupon.

MONSANTO CHEMICALS – PLASTICS

*Reg. U. S. Pat. Off.

MONSANTO CHEMICAL COMPANY 8/53
1702 South Second Street, St. Louis 4, Missouri

Please send information on: ☐ Aroclors in rubber-base coatings ☐ Isocyanates

Please send:
☐ Sample Fumaric Acid
☐ Data sheet and price information Fumaric Acid
☐ Sample Hexamethylphosphoramide
☐ Data sheet Hexamethylphosphoramide

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

When inquiring check CP 2774 on handy form, pgs. 2-3

Most of the testing was done with standard fiberboard shipping containers. Some were coated with a dispersion of the repellent and others were left untreated. Each box contained one-half pound of ground rat food as an attractant. Boxes were then exposed to intensive wild Norway rat attack. Rats had been graded and screened prior to every test so that only extremely active "gnawers" were used. At the end of about 30 days' test period, the following results were observed;

In every case the untreated boxes were penetrated on the first day of exposure, although the results varied with such factors as whether or not supplemental food was available to the rats during the test. The boxes coated with Good-rite z.a.c. repelled the rodent attack for as long as 45 days in some tests. Similar results have been obtained in tests involving multiwall bags, burlap, and other packaging materials.

(Repellent is a product of the B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Building, Cleveland, Ohio . . . or for more information check CP 2775 on handy form, pages 2 and 3.)

Wyandotte offering Lindane

Currently available in commercial quantities is a pure gamma isomer of benzene hexachloride — Lindane. Maker's product is chemically stable and easily handled for formulating solution or powder insecticides. The highly refined gamma isomer of BHC has none of the odorous impurities found in the lesser gamma grades. Only about 12% as much Lindane is required for insect control as would be needed of technical BHC.

(Product of the Wyandotte Chemicals Corporation, Dept. CP, Wyandotte, Michigan . . . or for more information check CP 2776 on handy form, pages 2 and 3.)

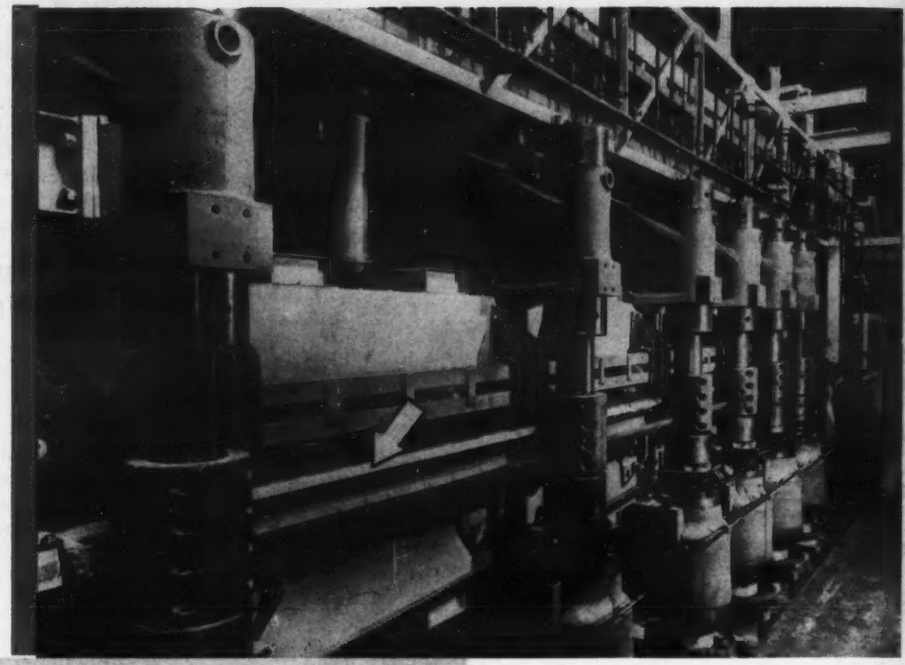
Casting resins withstand temps of subminiaturization

Group of casting resins were developed by manufacturer in answer to the need for commercial material which could withstand the temperature range demanded by practical subminiaturization techniques. These resins are reported to be extremely resistant to both high and low temperatures, have excellent mechanical properties, exhibit a marked adhesion to metals, and high resistance to water vapor transmission.

Informative booklet describes the nature of the resins, their various properties, applications and methods of use. Numerous charts and tables supplement text.

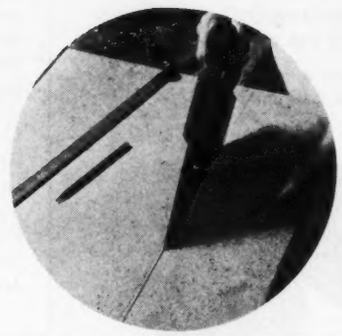
"Aritemp Resins" is issued by R. S. Aries & Associates, Dept. CP, 400 Madison Ave., New York 17, N. Y. When inquiring specify CP 2777 on convenient Reader Service slip between pages two and three.

ideas



Board is formed continuously as chip-resin mixture (arrow), between two moving stainless steel belts, passes between heated, hydraulically operated platens

Board Made from Wood Chips or Other Fibers Rolls off Continuous Press at 30 fpm



Panel made from wood chips in continuous press can be sawed, cut, nailed or otherwise worked with ordinary tools

Automatic process makes 50 tons per day of readily-worked panel material in widths to 48″ and thicknesses to ¾″, with 3 men per shift

PROCESS for production of reconstituted wood panel, based on an English-developed continuous press, has been introduced in the US. Using practically any kind of wood materials (and other fibrous wastes) as feed, the automatic process puts out a continuous strip of panel up to 48″ wide, 3/16 to ¾″ thick, and with a density of 31 to 47 lb/cu ft. Decorative papers, textiles, metal foils, laminates, etc., can be bonded to board during manufacturing process; certain additives may be incorporated for pest-resistance and fire-retardance.

PHYSICAL PROPERTIES OF BARTREV BOARDS

	S*			SP**			T***		
Density	0.65	0.70	0.75	0.65	0.70	0.75	0.65	0.70	0.75
Modulus of rupture, psi	2500	3000	3500	3000	3300	3800	4000	4500	5000
Compressive strength, psi	2500	2500	2500	2500	2500	2500	2800	2800	2800
Tensile strength, psi	1900	2300	2600	2300	2500	2900	3000	3100	3300
Effective modulus of elasticity, tons/sq in	135	135	135	135	135	135	135	135	135
Heat transmission, Btu/sq ft/hr/°F, per 1″ thickness	0.9	1.0	1.0	0.9	1.0	1.0	0.9	1.0	1.0

*Board made from shavings or similar by-products from woodworking factories.
**Same as S, but has been paper-surfaced during manufacture.
***Board made from specially prepared chips.

Conveyor carries wood chips, containing a small amount of resin, to feed end of continuous press

The material — Bartrev board — was first made commercially in England in June 1952. This plant is now producing at the rate of 30 million sq ft per year, and its production area is less than 10,000 sq ft of floor space. Speeds reach 30 fpm.

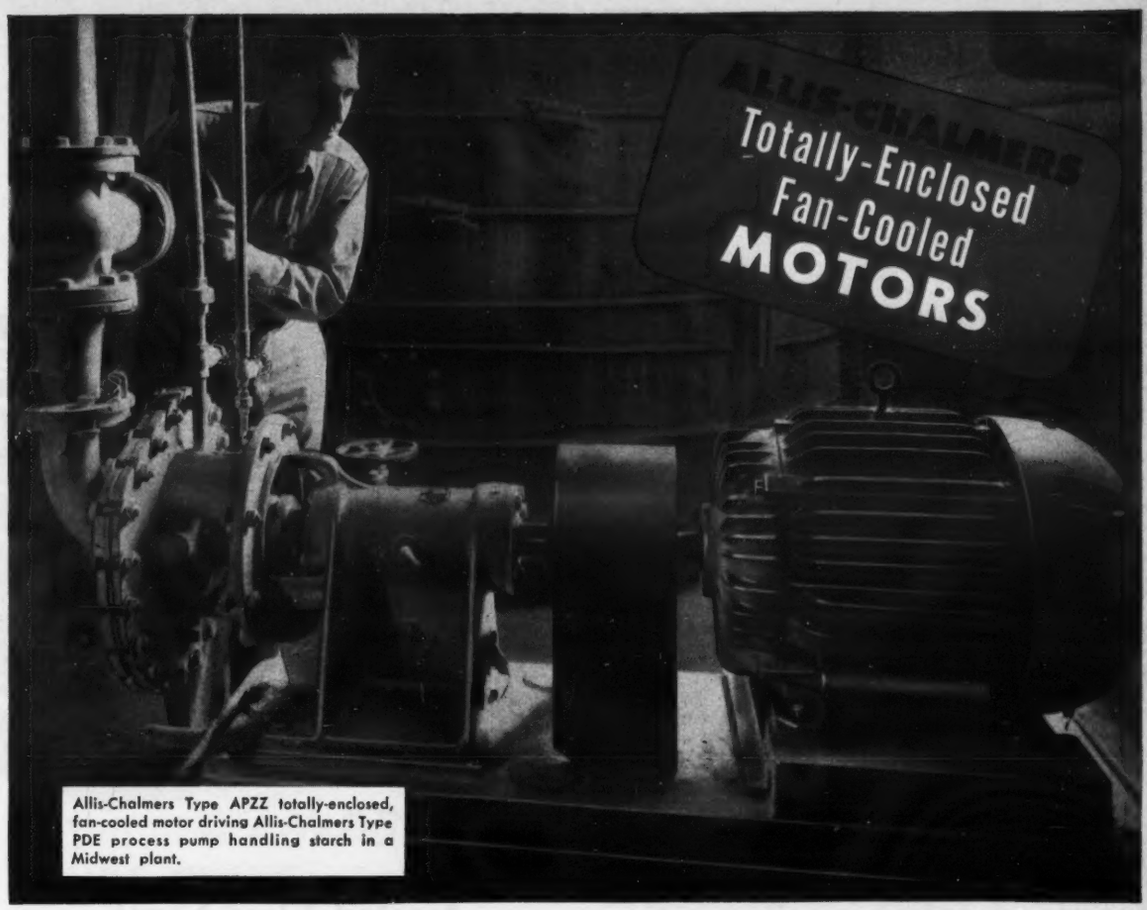
Board is light and strong (see table) and has an attractive smooth surface. It can be sawed, bent, cut, screwed, nailed, drilled and jointed with ordinary woodworking tools. Main uses include panels for pre-fab homes, as doors, flooring, store fixtures, display pieces and stage settings, and in furniture manufacture. Faced with metal sheeting, the board provides automotive manufacturers with a durable, puncture-resistant and economical lining and truck body material. It can be used as a low-cost core material for wood veneers, and can be laminated with various plastics and other materials.

The Process in Brief

Actually, several processes have been developed, to meet the various conditions of raw material, but all follow the fundamental procedure of 1) reducing wood chips or other cellulosic feed to a certain size, 2) mixing with 4 to 8% of wet or dry thermosetting resin, 3) polymerizing the resin continuously under heat and pressure, and 4) trimming and cutting the panels to size.

The automatic Bartrev press, on which steps 3 and 4 take place, is 131′ long, 20′ high, 7½′ wide, and weighs about 200 tons. It can be operated by 3

(*Continued on page 47*)



Allis-Chalmers Type APZZ totally-enclosed, fan-cooled motor driving Allis-Chalmers Type PDE process pump handling starch in a Midwest plant.

Get These 3 Low Maintenance Features

1 Wide Open Air Flow

No enclosed external air passages to clog. Easy to clean with cloth, brush, air hose or vacuum. Simply remove fan cover and whole radiating surface is exposed for inspection and cleaning.

2 Cast Iron Construction

Frame, conduit box and fan cover of cast iron resist corrosion. Fan is non-sparking, corrosion-resistant material. Well suited to outdoor operation.

3 Pre-lubricated Bearings

Ball bearings are double-shielded type, pre-lubricated at the factory. Periodic lubrication is not required under normal operating conditions, but provision is made for in-service lubrication if necessary.

GET COMPLETE INFORMATION on Allis-Chalmers motors for indoor and outdoor service — complete with Allis-Chalmers coordinated control — from your nearby A-C Authorized Distributor or District Office, or write for Bulletins 51B7286 and 51B7149. Allis-Chalmers, Milwaukee 1, Wisconsin.

Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

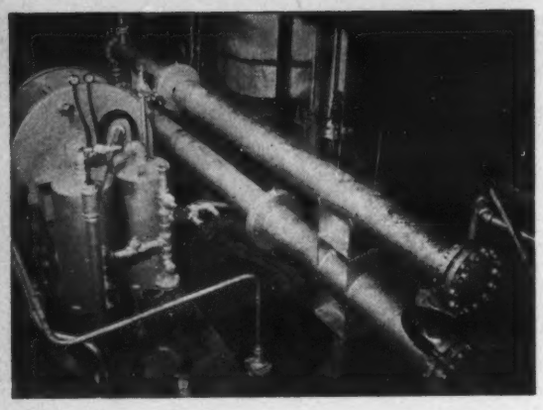
TEXROPE V-belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.

PUMPS — Integral types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

A-4037

When inquiring check CP 2778 on handy form, pgs. 2-3



When are 2 heat exchangers BETTER THAN ONE?

Here's an example of how Pfaudler engineering know-how can solve your heat exchanger problems at the lowest possible cost to you.

A chemical processor came to us for a single heat exchanger to do a single duty. But after careful analysis of the customers requirements, our engineers recommended the *two* heat exchangers shown in the picture above. Why?

Because of the unusual temperature conditions under which this customer was processing, it was determined that two heat exchangers connected in series, instead of one, would do the job more efficiently — and therefore more economically. More than a year of actual operation has proved this to be true.

Pfaudler also offers a complete line of standard stainless steel heat exchangers. Because of our extensive stocking of standard parts, even the standard Pfaudler heat exchangers can generally be engineered to your individual requirements. Yet they cost you no more than standard units. And new production methods make possible 4 to 12 week deliveries.

Whenever you have an engineering problem involving heat exchange, we will be glad to discuss it with you — without obligation. And the chances are that Pfaudler can solve it in the least time and at the lowest possible cost to you.

ALL THE DATA YOU NEED to work out heat exchanger capacity and type problems is contained in this 40-page, fact-packed Pfaudler manual. The tables, charts and curves are easy to follow. And it includes full details on Pfaudler heat exchangers. Mail the coupon for your copy.

Pfaudler

Engineers and fabricators of corrosion resistant process equipment since 1884

GLASSED STEEL • HASTELLOY • ALUMINUM • CARBON STEEL • SOLID OR CLAD STAINLESS STEEL • NICKEL INCONEL • MONEL

THE PFAUDLER CO., Dept. CP-8, Rochester 3, N. Y.

Please send me the Pfaudler Heat Exchanger Manual No. 837

Name .....

Title .....

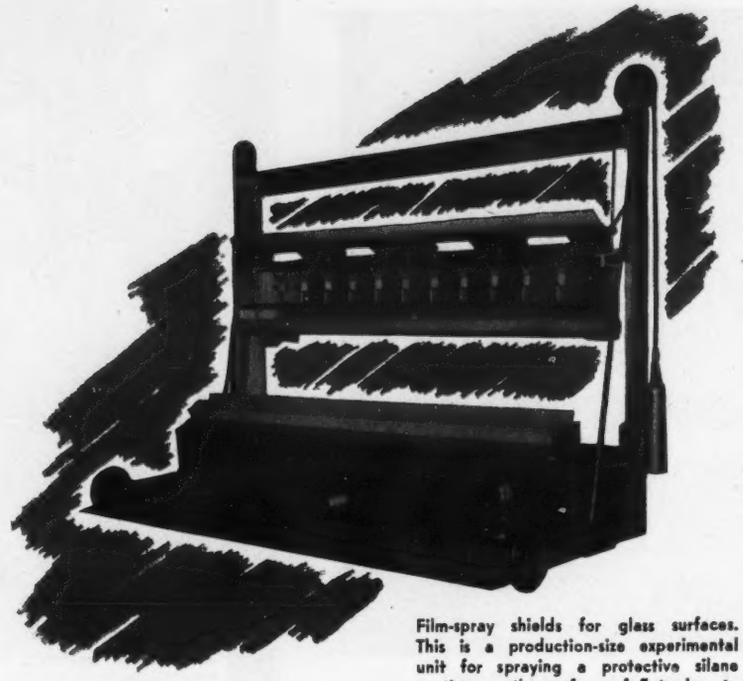
Company .....

Address .....

City ..... **Zone** ..... **State** .....

When inquiring check CP 2779 on handy form, pgs. 2-3

ideas



Film-spray shields for glass surfaces. This is a production-size experimental unit for spraying a protective silane coating on the surface of flat glass to eliminate "slip-sheeting" of glass with paper for shipment

Treated Glass Sheet Not Easily Scratched; Is Water Repellent, Easy to Clean

Silicone surface protection eliminates costly "papering"; might be applicable to materials such as plastics, metals, etc.

THE Adamston Flat Glass Company of Clarksburg, West Virginia, recently took the wraps off a new process for surface treatment of glass sheet that is reported to eliminate entirely the need for "papering" or "slip-sheeting" of glass for storage or shipment. Not only is paper a costly item, it is difficult to apply between sheets and also difficult to remove at time of use. In addition, glass protected by paper has often been stained or scratched after extended storage.

An invisible, microscopically-thin silicone resin coating is applied to each surface of the glass by the Adamston Process. This provides ample separation between sheets of glass to prevent abrasion and prevent leaching of alkalis from glass that often fuse sheets into an inseparable mass.

Treatment has no effect whatever on the transparency of glass. It renders the glass water-repellent. Moisture condenses less readily on treated glass and dirt does not adhere as easily. Glass windows are said to be much easier to clean. Accelerated weathering tests indicate that the effectiveness of the treatment is not impaired after 5 years.

The silicone treatment is thought to be applicable to other sheet materials as well . . . including plastics, metals, etc. One concern is testing the coating on TV tubes and light bulbs to prevent scratching and reduce rejects.

Apparatus for applying the coating consists of a metal chamber with a series of spray nozzles which spray a liquid solution of the coating on the glass.

An automatic recovery system is built into unit to recover solvent which carries coating material.

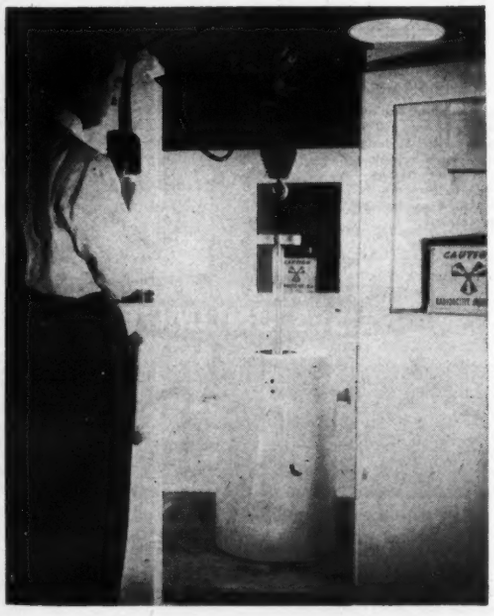
The Editors had the oportunity to inspect a sample glass panel treated by the Adamston Process. When a raw corner of glass is drawn over ordinary glass the surface is badly scratched, whereas the same destructive force to treated glass causes no apparent damage. The treated glass surface has a waxy touch as compared with untreated surfaces.

(Adamston Process will be licensed to other manufacturers. Equipment for the process was developed in cooperation with Process Industries Engineers Incorporated, Dept. CP, 5640 Friendship Avenue, Pittsburgh 6, Pennsylvania . . . or for more information check CP 2780 on handy form, pages 2 and 3.)

Test effects of irradiation on lubricants . . .

oil company has radioactive cobalt source for work connected with atomic engine studies

View below is of gamma radiation unit being used by a research subsidiary of an oil company for the purpose of testing the effects of irradiation on lubricants and other materials likely to be exposed to radioactivity in an atomic engine. The radioactive source, a 14-inch section of 2-inch cobalt tubing,



is housed vertically in the drum-shaped shield at the center of the photo. Shield weighs 2 tons. Operator at left removes long plug from the shield by remote control mechanism, preparatory to inserting test material to be exposed to radiation. Door at right is open for photography purposes only.

(Information received from Standard Oil Co. of California, Dept. CP, 225 Bush St., San Francisco 20, California.)

"PYRODISC"

ONLY $25!*

the new LINDBERG HOT PLATE

At last! A quality, portable hot plate . . the Lindberg Pyrodisc!

It's built with the "occasional user" in mind. There's no point in buying the extra capacity of a larger hot plate if you don't need it. If your volume of "hot plate" work is limited, the Lindberg Pyrodisc is just what you want . . and its selling price is only $25.

These design, construction, and operating features make the Lindberg Pyrodisc Hot Plate an exceptional buy!

- Cast-in elements.
- "Stepless" control permits extremely precise control of temperatures.
- Terminals are protected from spillage and short circuits.
- Streamlined appearance . . it's not just a good piece of equipment . . it looks good, too!

Diameter, top plate and base 8" • Power rating, 660 watts • Power service, 115 volts, 50/60 cycle • Includes cord and plug for easy installation • Approximate shipping weight, 10 lbs.

For additional information, ask for bulletin No. 1030

*Price subject to change without notice.

Sheathed Nichrome heating elements are cast into aluminum top plate . . insuring quicker heating (750° F in 35 minutes), good uniformity, and exceptionally long element life.

SOLD ONLY THROUGH LABORATORY SUPPLY DEALERS

LINDBERG LABORATORY EQUIPMENT

Laboratory Division, Lindberg Engineering Company, 2480 West Hubbard Street, Chicago 12, Illinois

When inquiring check CP 2781 on handy form, pgs. 2-3

"KTPL" STYRENE RESINS for Superior Products

• Koppers now offers these new low-cost "KTPL" styrene resins in four different molecular weight ranges—relatively low to moderately high. The versatility of "KTPL" resins adapts them for varied applications in waterproof coatings for paper, textiles, cable and wire insulation. Other uses include leather finishes, impregnation of twine, wood, and textiles, and as modifying agents for printing inks.

"KTPL-3" Resin has been designed specially for use in the manufacture of dent-resistant, grease-resistant floor tile, which is tough and durable but light-colored and attractive, due to the excellent clarity and light stability of the resin.

Other grades of "KTPL" Resins are available in a range of softening points so that specific applications can be covered according to specific job requirements.

"KTPL" Resins are produced and shipped in the form of fine beads in 200-pound net fibre drums or in 65-pound net multiwall paper bags.

For additional information about "KTPL" Styrene Resins, write Koppers for free Technical Bulletin C-3-177.

KOPPERS COMPANY, INC.
Chemical Division • Dept. CP-83
Pittsburgh 19, Pa.

KOPPERS® **Koppers Chemicals**

When inquiring check CP 2782 on handy form, pgs. 2-3

IDEAS

Paper is resin-coated at 20-25% less cost than laminating . . .

process applies plastic film 2 to 70 mils thick

A fast coating process that puts resin films 2 to 70 mils thick on paperboard, as well as films and foils, has been announced. The product made by this process will do the same job as films laminated to paperboard, but will cost 20 to 25% less. Almost any type resin, except phenolic, can be used.

End uses for the products include packaging for frozen foods, doughnut and potato chip containers, and paper milk bottles. Coated paperboard molded into paper plates is another application which holds promise. Possible future applications include advertising signs, maps, novelties, toys, etc.

(Process is used by custom coaters, Irvington Varnish and Insulator Company, Dept. CP, 6 Argyle Terrace, Irvington 11, N. J. . . . check CP 2783 on form, pgs. 2 & 3.)

Reports on coking of coals

Carbonizing properties of Beckley bed coals from the Caretta No. 5 mine in McDowell County and the Glen Rogers No. 2 mine in Wyoming County, both in W. Va., are reported in Bureau of Mines bulletin. The report presents coal friability, chemical composition, plasticity, and free-swelling index.

Bulletin also discloses yield of carbonization products, tells properties of coke, gas, tar and light oil obtained, and gives Fischer low-temperature carbonization assays. Bureau of Mines Bul 522 is available, at 20c a copy, from Superintendent of Documents, United States Government Printing Office, Washington 25, D. C.

Company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

ONLY **PICCOLYTE** *can offer you:*

COLOR—so light that new color standards were made necessary.

ECONOMY—Low in first cost and soluble in low-cost petroleum solvents.

VARIETY—Standard and special grades in melting points from 10° C to 125° C.

NEUTRALITY—Low acid number—less than 4—unsaponifiable.

WATERPROOF—Piccolyte resins are unaffected by water or moisture.

PERMANENCE—Stable and non-yellowing—unaffected by alkalies and salts.

LOW COST—made by patented process that permits low selling price.

Write—for complete data, specifications and samples. Please describe intended use in inquiry.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
CLAIRTON, PENNSYLVANIA
Plants at Clairton, Pa., West Elizabeth, Pa., and Chester, Pa.
Distributed by Pennsylvania Salt Chemical Co., Pittsburgh 22, Pa. and Harwick Standard Chemical Co., Akron 5, Ohio

When inquiring check CP 2784 on handy form, pgs. 2-3

THE PROBLEM

For their rocket engine research and production, Bell Aircraft Corporation was designing a new instrumentation system. Their problem was finding a way to meter the propellant consumption remotely.

THE BALDWIN SOLUTION

The fuel feed tank is suspended from a cable attached to a Baldwin SR-4, 160 lb. load cell which supports the weight of the tank and fuel.

This system benefits Bell in these three ways:

1. The fuel consumption can be indicated and controlled remotely because the only connection from the SR-4 cell to the instrument is through electric cable.

2. Because of special aluminum construction this cell resists corrosion by common propellants such as hydrogen peroxide and nitric acid provided that cell is washed off after any accidental contact with them.

3. The need for maintenance is virtually eliminated by the rugged construction and by the absence of moving parts.

The uses of SR-4 devices throughout industry are unlimited. For further information about how they might cut your costs and time for measuring loads, pressure or torque, please write Dept. 3106, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pennsylvania.

TESTING HEADQUARTERS
BALDWIN-LIMA-HAMILTON
General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

When inquiring check CP 2785 on handy form, pgs. 2-3

Board from Wood Chips

(*Continued from page* 43)

men per shift, and produces at the rate of about 50 tons per 24-hr day.

Material (wood plus resin) is fed into a hopper which has a feeder at its base. The feeder spreads the chips in an even layer, of required thickness, on a moving stainless steel belt. This belt carries the "carpet" of material between the electrodes of a radio-frequency unit for preheating. As the carpet emerges from the heater, another stainless steel belt, moving in the same direction, presses down on it, and the material is compressed as it moves between heated platens which are operated hydraulically. It is held at this thickness and temperature until it's delivered to the sawing unit at the end of the line. Special attachments — rolls, roller coaters, etc. — are added if paper-surfaced board is to be made.

(Bartrev presses are products of Aries Fiberboard Corporation, Dept. CP, 400 Madison Ave., New York, N. Y. . . . check CP 2786, pages 2 and 3.)

Miller bill, on pesticide residues, is filed

A new bill designed to prevent the sale of food containing excessive residues of pesticides has been introduced by Rep. A. L. Miller (R-Neb). The bill (HR 4277) is the first of a series of three promised by Dr. Miller. The others dealing with chemical additives in food and in cosmetics will come later, Dr. Miller's office said.

Under the Miller pesticide bill, any person who submits an application for registration of a pesticide to the USDA, may at the same time, ask the Food and Drug Administration to set specific limits on the amount of pest poisons which may remain on foods. The FDA Administrator must act within 90 days after submission of evidence to establish tolerances or to exempt the pesticide. In applying to the FDA, manufacturers would have to provide the following information: (1) toxicity data; (2) recommended use procedures; (3) test information showing normal residues of the pesticide; and (4) proposed tolerance together with reasonable grounds in support of the petition.

Petitioner may request that the evidence be placed before an impartial advisory review board before final decision is made by the FDA Administrator. The Board's decision would be part of the final evidence placed before the FDA Administrator before a tolerance regulation would be issued.

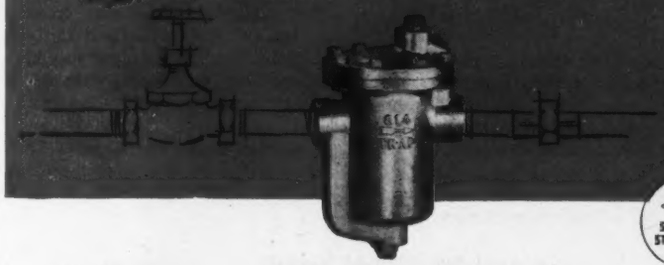
The bill also provides an appeal to the federal courts from the ruling of the administrator — something which is almost impossible under the current law.

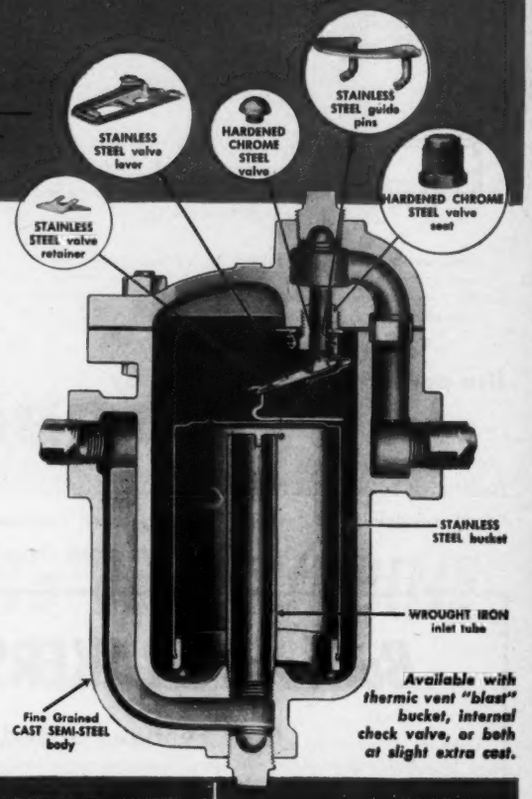
Industry is reported to like the Miller approach. The pesticide industry opposed the earlier Delaney bill which lumped all chemical additives in foods into a single bill. They argued that the Delaney approach was unfair because their products presented an entirely different problem than that presented by intentionally added chemicals such as food preservatives.

NEW

ARMSTRONG No. 814

. . . a side inlet-side outlet steam trap with 1" or 1¼" pipe connections!




STAINLESS STEEL valve lever
HARDENED CHROME STEEL valve
STAINLESS STEEL guide pins
HARDENED CHROME STEEL valve seat
STAINLESS STEEL valve retainer
STAINLESS STEEL bucket
WROUGHT IRON inlet tube
Fine Grained CAST SEMI-STEEL body

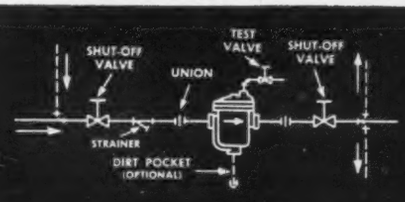
NOW, with the addition of the No. 814, you have a choice of five sizes of Armstrong side inlet-side outlet traps from ½" to 1¼" for use wherever horizontal and opposite pipe connections will make the simplest hookups. Bottom inlet-top outlet traps are available in the same size range, so that for the majority of all condensate loads you can use the body style that best suits the job.

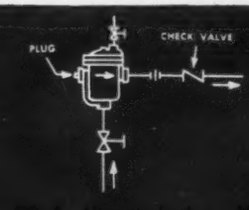
Capacity of the new No. 814 is 6500 lbs./hr. at 125 psig.; height 13⅝"; face to face dimension 8"; weight 45 lbs.; price $46.00 list.

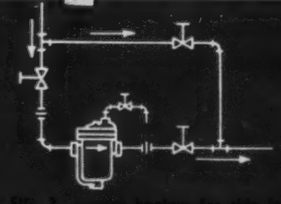
For complete data on the No. 814 and other Armstrong traps, call your Armstrong Representative or mail the coupon today.

Available with thermic vent "blast" bucket, internal check valve, or both at slight extra cost.

ARMSTRONG MACHINE WORKS
880 Maple St., Three Rivers, Mich.







HOW TO ORDER:
Refer to Armstrong Catalog J, Sweets' Plant Engineering or Industrial Construction Files or Chemical Engineering Catalog. Capacities of the 814 are identical to the 214 trap listed in these Catalogs. Other data are given above. Specify trap number, pipe connections and maximum operating pressure.

ARMSTRONG MACHINE WORKS
880 Maple St., Three Rivers, Mich.

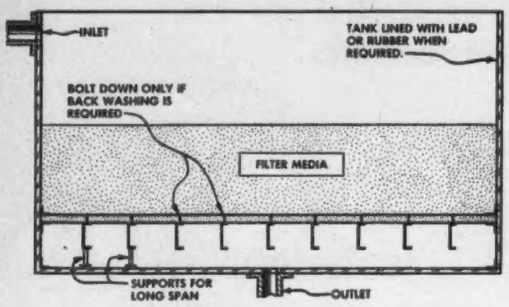
☐ Send complete data on No. 814 trap.
☐ Send Catalog J listing all Armstrong traps.
☐ Have Representative call.

Name_____
Company_____
Street Address_____
City_____ Zone____ State_____

When inquiring check CP 2787 on handy form, pgs. 2-3

FOR CHEMICAL OR BRINE FILTRATION

..."ALOXITE" porous underdrains


INLET
TANK LINED WITH LEAD OR RUBBER WHEN REQUIRED.
BOLT DOWN ONLY IF BACK WASHING IS REQUIRED
FILTER MEDIA
SUPPORTS FOR LONG SPAN
OUTLET

Cross section of a typical circular or rectangular steel tank used for chemical filtration. If chemical attack is involved, the tank can be suitably lined and the plate supports covered.

Wherever any comparatively inert material (such as sand or "Anthrafilt") is used for filtering chemical solutions, brine, etc., it pays to support the filter media with a porous bottom. Specifically, an ALOXITE aluminum oxide underdrain system.

By eliminating the graded gravel, your initial investment is normally less. You get maximum flow through the filter, keep pressure loss to a minimum. Backwashing and cleaning is easy and efficient.

There are many possible applications. For example, rayon spin bath solutions — or the concentrated brine used for making chlorine or caustic soda by electrolysis — or brine used for regenerating zeolite softeners. And so on.

ALOXITE plates are inherently resistant to virtually all acids. They are very rugged for a ceramic product, and can withstand temperatures as high as 900° C. Various shapes are available for a wide range of equipment designs.

YOU'LL WANT OUR POPULAR BOOKLET. It's *the* up-to-date reference source on porous media. Its 56 pages cover *all fields of filtration and diffusion*—including information on applications, specifications, designs, installation and operation. Write for your free copy today.

Use porous plates and tubes by

CARBORUNDUM
Trade Mark

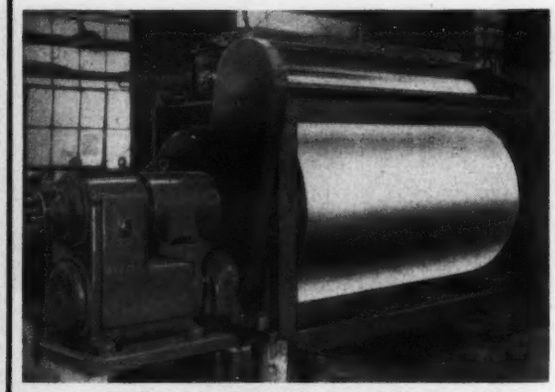
Dept. S-83, Refractories Division — The Carborundum Co., Perth Amboy, N. J.

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company.

When inquiring check CP 2788 on handy form, pgs. 2-3

Buflovak FLAKERS & COOLING DRUMS

New Features Speed Production . . . Lower Costs



BUFLOVAK Atmospheric Single Drum Cooler, 5' x 8'5". Used for chilling soap.

A uniform, high quality, finished product . . . more of it . . . and at lower cost . . . are the results of many new BUFLOVAK profit-building features.

BUFLOVAK Flakers are extensively used in the Chemical industries to produce granular or flaked material. This process offers continuous operation, large capacity, and a finished product free from lumps.

BUFLOVAK Flakers are built in open or closed types. The latter eliminates dust and toxic hazards. They are available in several sizes of any suitable material, with individual modifications to suit various applications; such as, steam jacketed, direct fired, or electrically heated feed pans.

The technical staff of BUFLOVAK can help you with your flaking and cooling problems.

You will be sure of better results from BUFLOVAK.

Send for Catalog 352

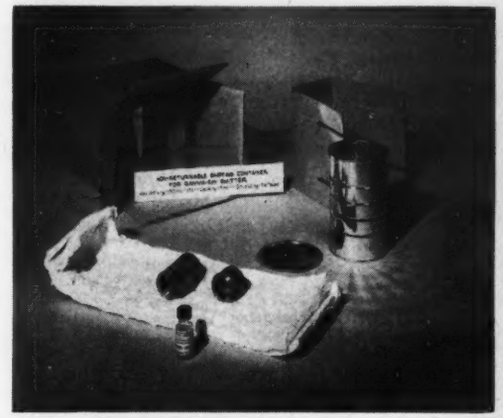
BLAW-KNOX COMPANY
BUFLOVAK EQUIPMENT DIVISION
1579 Fillmore Ave. Buffalo 11, N.Y.

When inquiring check CP 2789 on handy form, pgs. 2-3

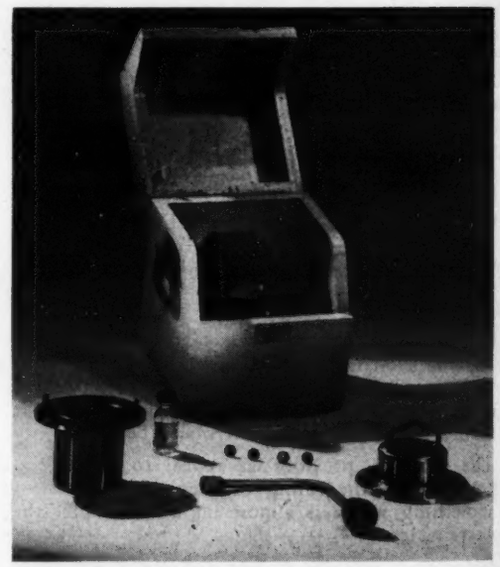
Lighter shielding requirements slashes costs of radioisotopes . . .

due to weight reduction in containers, air-express shipping charges cut 50% in some cases

Prior to 1952 purchasers of radioisotopes were frequently paying more in shipping charges than the cost of the radioactive materials themselves. This was due to the requirements in force by carriers concerning maximum radiation allowed through the shielding



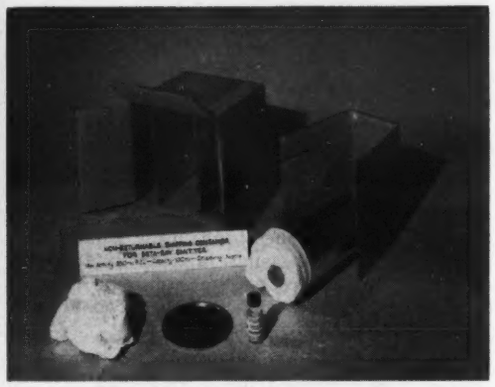
Shipping weight today 5 lb — previously required 33 lb (see below). A non-returnable container for radioactive iodine of 150 mc activity. Shielding required is ⅜" of lead



Returnable container shown weighs 33 lb. It was used before the introduction of the newer, non-returnable container shown above. Although displaced by the non-returnable in shipping a material of specific activity, the 33-pounder in turn, can be used for materials which were shipped before in containers weighing 55 to 122 lb. All this is due to higher allowable exposure limits

container. To meet the then-current exposure limit of 15 mr/hr, the radioisotope in most cases had to be shipped in heavy lead shielding. This of course, necessitated a box heavy and strong enough to carry the shielding — further adding to the total shipping weight and cost. Result, and by way of contrast, was a container weighing about one billion times as much as the radioactive material being shipped. An added cost to all the above was that incurred in returning the shipping containers to the AEC production site.

Since then, with the railroads leading the way, an exposure limit of 200 mr/hr has been adopted. Airlines accepted the standard by March 1952. Although



Shipping weight today 2 lb — previously required 11 lb. A non-returnable container for a beta-ray emitter — in this case radioactive phosphorus of 350 mc activity. No shielding required

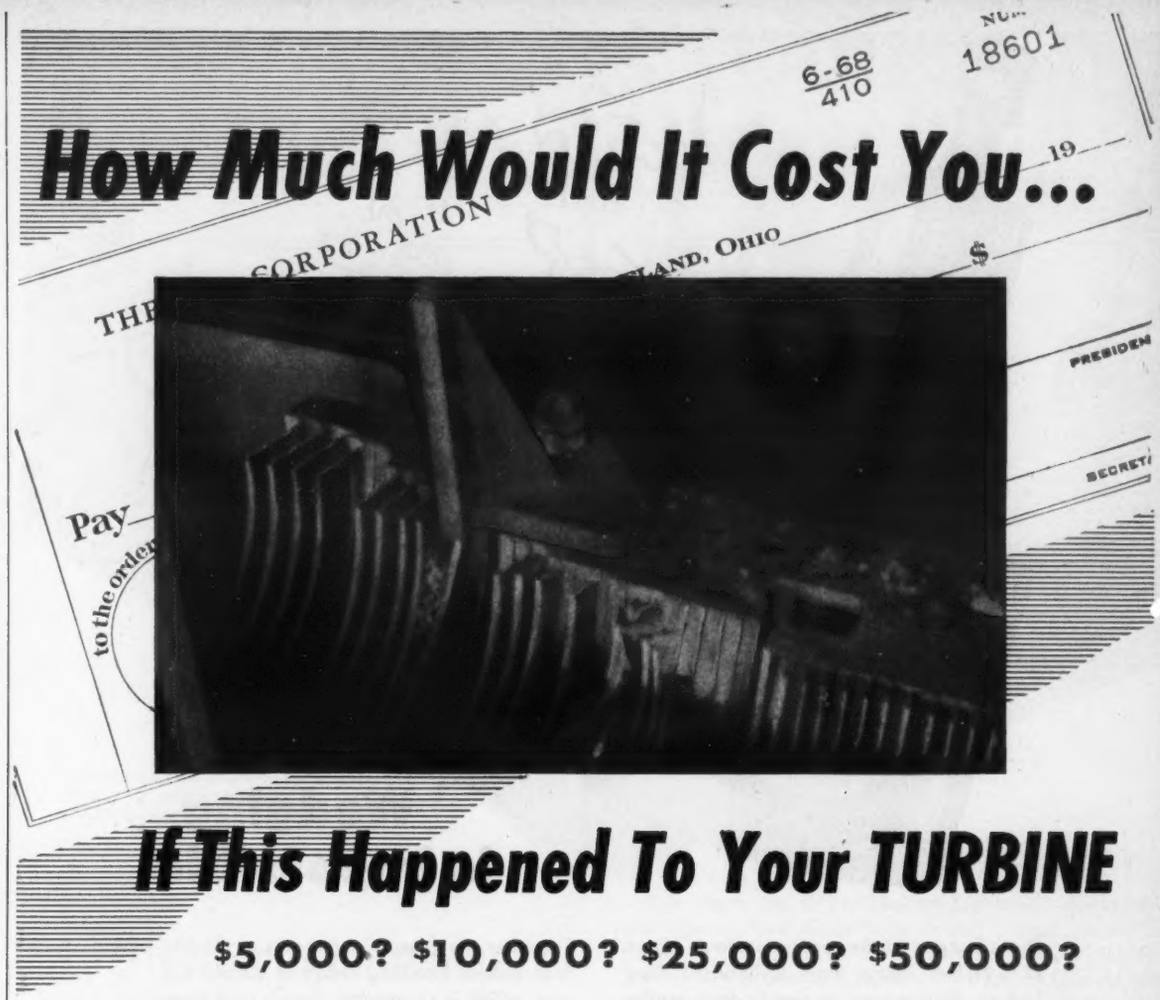
over 10 times greater than the previous limit, there is not a corresponding increase in the hazard involved. Reason is that the previous limit was made to be on the "super-safe" side.

Major savings accruing as a result of the new tolerance level occur in air shipments of radioisotopes. Air-express shipments are necessary with those materials of short half-life, such as iodine-131 and phosphorus-32. Since these two constitute over 45% of the total shipments made from Oak Ridge National Laboratory, the weight reductions effected are important ones.

Illustrative of the slash in shipping costs are the following figures from ORNL. In 1949, a radioisotope buyer was paying $10.35 for an air-express shipment of 55 lb to Chicago (exclusive of the cost of the radioactive material). Cost of returning the container was $3.93. In 1952, the Laboratory sent the same material — total shipping weight now 18 lb — by air express for $4.77. Charges for returning the container totaled $2.19.

Adoption of the higher exposure limit has achieved two main things: it has allowed a reduction in the weight of the returnable containers; it has also permitted a greater use of non-returnable, paper-box containers in place of the heavy, reinforced wood cases. Thus, the original freight charges are reduced and, in this case, return charges are eliminated.

(*Continued on next page*)



If This Happened To Your TURBINE

$5,000? $10,000? $25,000? $50,000?

● Replacement of turbines is costly . . . even in the case of minor repairs, labor, parts, and downtime costs soon mount up. To go under the assumption that the installation of superheaters in a boiler eliminates the need for purifier protection is dangerous. It did not protect this turbine which is almost a total wreck because of carry-over. Particularly during startup and periods of faulty boiler operation such as occurred above, turbines should have purifier protection.

You owe it to your plant management to insist upon protection of every turbine with a Hi-eF Purifier. These high efficiency units cost no more than ordinary separators yet assure you of the delivery of clean, dry steam of better than 99.95% quality, to your turbines. A Hi-eF Purifier removes virtually all line scale, water and mist and dirt that might build up and erode turbines, reciprocating engines and the like.

The use of Hi-eF Purifiers ahead of turbines and other steam using equipment and in boilers is a worth-while investment . . . much less than the cost of repairs and downtime. Performing at all times at high efficiency without the use of moving parts, a Hi-eF Purifier requires no maintenance. Don't chance a costly breakdown. Write, wire or phone today for information on protecting your steam-using equipment.

WATCHDOGS OF STEAM • AIR • GAS • VAPOR PIPELINES AND EQUIPMENT

UPFLOW INTERNAL PURIFIER

LARGE LINE TYPE PURIFIER

DOWNFLOW INTERNAL PURIFIER

RECEIVER TYPE PURIFIER

THE V. D. ANDERSON COMPANY
1959 West 96th Street • Cleveland 2, Ohio
Please send information on the following type of purifiers:
☐ Line Type ☐ Internal Upflow ☐ Internal Downflow ☐ Receiver
Name..... Title.....
Address.....
City.....
State.....

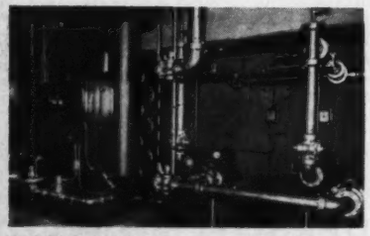
BY THE MAKERS OF SUPER-SILVERTOP STEAM TRAPS

When inquiring check CP 2790 on handy form, pgs. 2-3

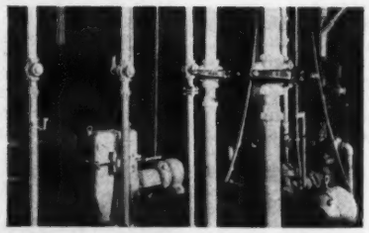
Wedging is impossible

That's just one of the reassuring facts about a.c.f. Full Round Port Cylindrical Plug Valves. The second is simply that you're always assured 100% unobstructed flow at all times.

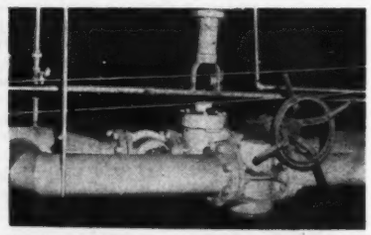
Together they mean long years of trouble-free service handling heavy or viscous ladings, solids in suspension, liquids and gases with equal efficiency.
You can be *sure* when you specify a.c.f.!



IN SEWAGE PLANTS the a.c.f. CYLINDRICAL Plug shears obstructions . . . provides uninterrupted flow on sludge lines.



IN INDUSTRIAL PROCESSING a.c.f. Valves handle materials in suspension, here it's clay slip, with no erosion problems.



IN STEEL PLANTS on natural gas lines to open hearths, the full pipe area and non-wedging features mean full flow, fast shut-off.

a.c.f. CYLINDRICAL FULL PIPE AREA **PLUG VALVES**

Write for Catalog 4-CP. American Car and Foundry Company, Valve Division, 1501 E. Ferry Ave., Detroit 11, Michigan.

Representatives in 50 Principal Cities

When inquiring check CP 2791 on handy form, pgs. 2-3

(*Continued from preceding page*)

Showing the reduction in weight effected is the following comparison of 1949 and 1952 (through November) air-express shipments:

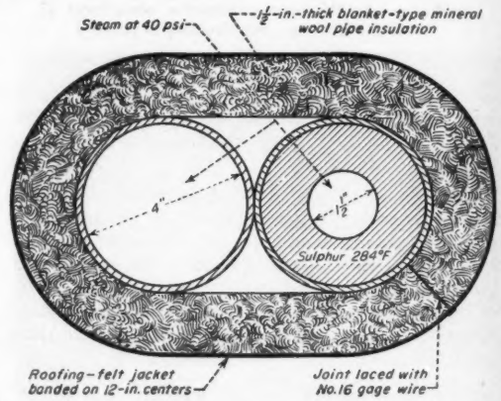
	1949	1952
Number of shipments	4080	6690
Total weight	220,573	121,414
Average weight	54	18.2

(Information courtesy of Oak Ridge National Laboratory, Operated by Carbide and Carbon Chemicals Co., A Division of Union Carbide and Carbon Corp., Oak Ridge, Tenn.)

Efficiency of insulation improved by unit application on pipes parallel in long runs

Wherever pipes are parallel, close together and contain temperature-compatible materials, it is often economical and equally as effective to insulate entire group as a unit. Most pipes go their own way in servicing process equipment and must be individually insulated. On the other hand, many parallel pipe runs are so short that savings in group insulation are small. But reduced cost of pipe insulation and application time becomes significant when two or more pipelines are parallel in long runs.

For example, insulating method on a pair of parallel lines in a long elevated run at an eastern chemical plant is detailed in the drawing. Process steam at



Cross section of parallel lines shows details of insulation application

40 psi (or 267°F) and molten sulfur at 284°F are carried in two 4" pipelines, the sulfur line being internally traced by a coaxial 1½" steam line.

Mineral wool blanket-type insulation in 24" long sections was wrapped around both pipes, laced tightly at the joint with 16-gage galvanized iron wire, and banded at about 12" intervals. A weather-resistant roofing-felt jacket was then applied over the insulation and also banded on 12" centers. Since the lines are entirely exposed, insulation joint is located on the underside and roofing felt is lapped downward about 3". Whether parallel pipes are indoors or outdoors and contain steam, molten sulfur,

asphalt, water, or any other heated material, flexible blanket-type pipe insulation applied in this manner is said to maintain process temperatures efficiently at a lower initial cost.

(Information courtesy of Industrial Mineral Fiber Institute, 441 Lexington Avenue, Dept. CP, New York 17, N. Y.)

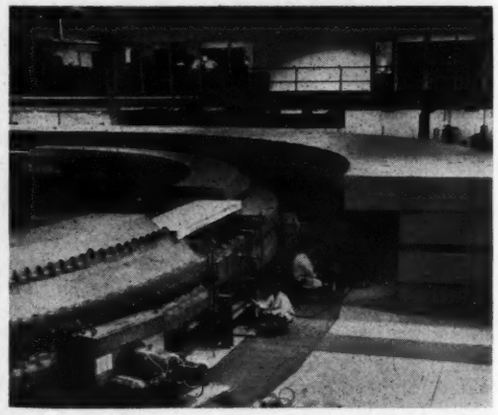
Thin coating of polyester resin protects cosmotron from abrasive particles . . .

prevents concrete shielding blocks, which are occasionally moved, from causing dust

An 8 million dollar cosmotron, which is being used in a search for basic facts about the atom, is shielded for more than 100 feet around its circumference by a series of 10-ton concrete blocks stacked four tiers high. The blocks protect scientists working at controls and experimental equipment from radiation resulting during operation of the cosmotron.

Because the cosmotron is a delicate piece of equipment, it is necessary to keep the 200-feet long room in which it is housed at an Atomic Energy Commission site virtually dust-free. One of the problems is preventing the concrete shielding blocks, which are moved occasionally, from causing dust.

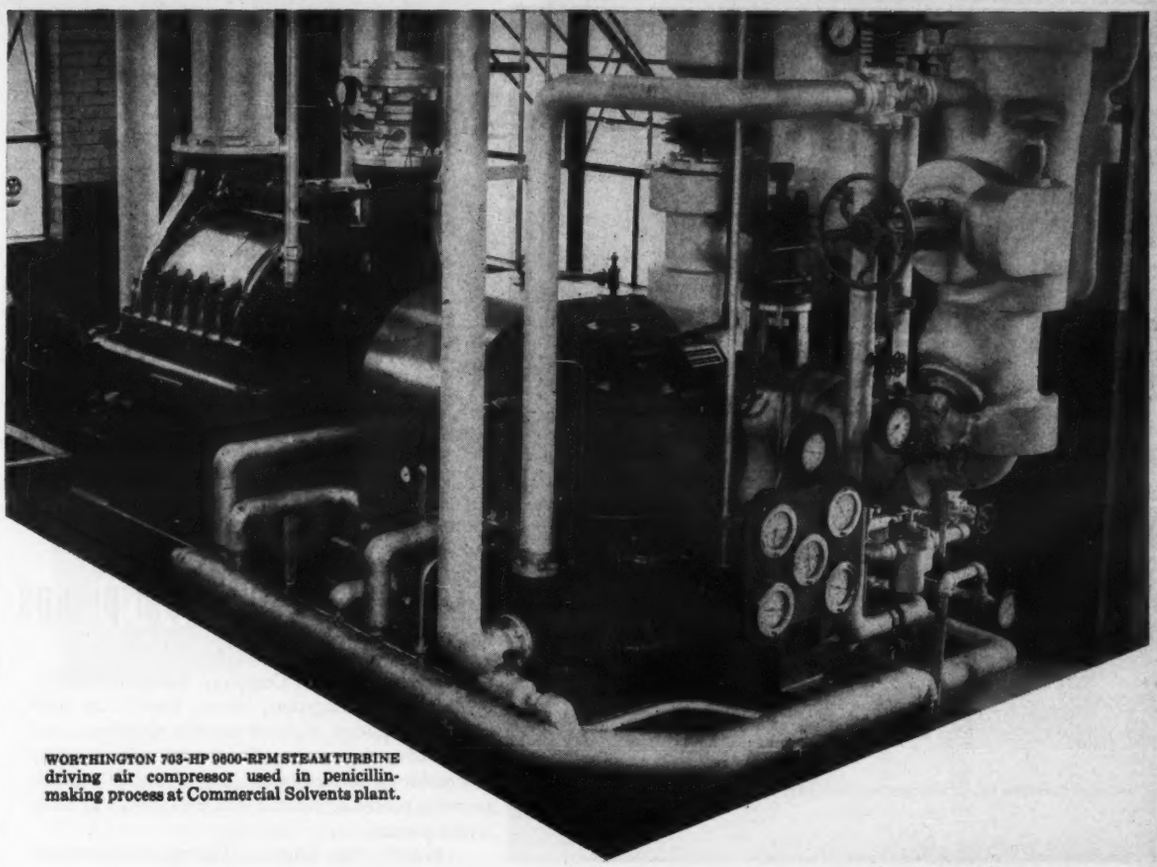
Problem is solved by using a thin coating — 1/32-inch in thickness — of a polyester resin. Latter seals the cement block with a hard, glass-like surface.



Series of 10-ton concrete blocks, right and background, shield this giant cosmotron and prevent injury to personnel from radiation resulting during operation. Blocks are moved occasionally and to prevent dust injury to equipment, they are coated with a thin film of resinous material.

In this application, the resin was extended with calcium carbonate and a pigment was added to give the blocks a grey color. Approximately 100 of the 10-ton blocks were coated by this method in 15 working days.

(Polyester resin used is called Vibrin and is a product of U.S. Rubber Co., Dept. CP, Rockefeller Plaza, New York 20, N. Y.)



WORTHINGTON 703-HP 9600-RPM STEAM TURBINE driving air compressor used in penicillin-making process at Commercial Solvents plant.

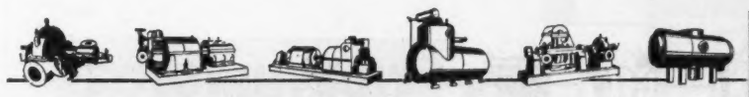
9600-rpm turbine drives compressor in making penicillin for Commercial Solvents Corp.

Two years ago, a Worthington high-speed steam turbine was installed in the Terre Haute, Indiana, penicillin plant of Commercial Solvents Corporation. Its high efficiency and economical steam consumption plus its low maintenance demands have justified that selection many times over.

In addition, use of Worthington high-speed, direct-drive turbines to drive centrifugal compressors or blowers makes possible a broad speed range, elimination of costly speed increasing gears, and adaptability to various governing arrangements for precise control under all operating conditions. Worthington's design flexibility provides you with the *right* type and size turbine for optimum performance—regardless of your requirements.

Remember, when you're considering turbines for driving compressors, the engineering of the turbine is just as important as the engineering of the compressor. Worthington's long and complete experience in compressor-drive engineering is your assurance of maximum efficiency. Write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

T-2-19

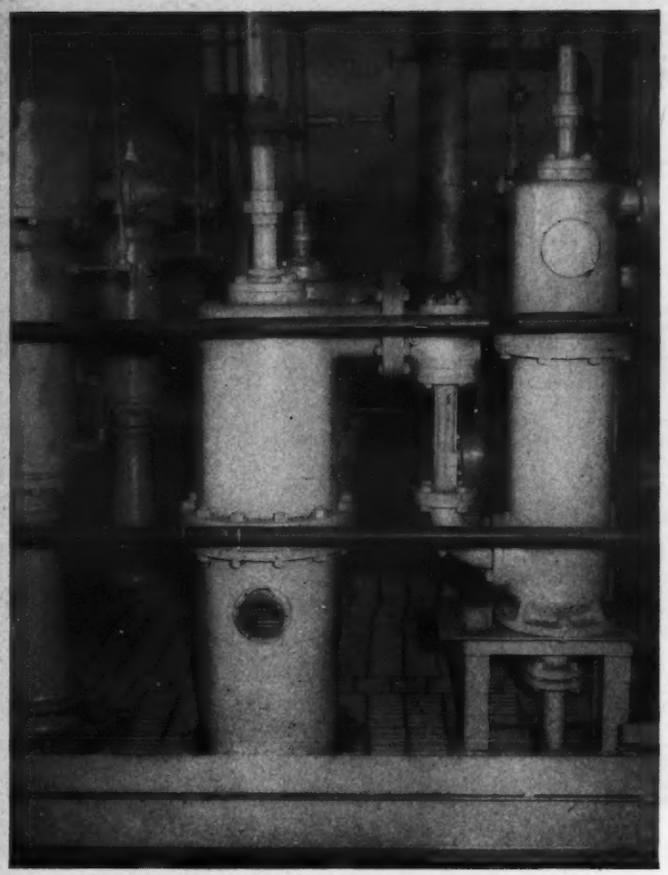


A GREAT TEAM IN STEAM

WORTHINGTON

Steam Turbines

When inquiring check CP 2792 on handy form, pgs. 2-3



BETTER YIELDS, FEWER SHUTDOWNS have been made possible by the Worthington steam jet ejectors at Tennessee Eastman. Shown is a portion of the two Worthington 8-RPJ four-stage single element ejectors with barometric inter-condensers.

TENNESSEE EASTMAN INCREASES CHEMICAL YIELD WITH WORTHINGTON STEAM JET EJECTORS

Two Worthington units replace four vacuum pumps

Tennessee Eastman Company, Eastman Kodak's division in Kingsport, Tenn., found that their vacuum pumps required periodic shutdowns and excessive maintenance. The trouble was caused by emulsions formed when the organic chemicals being processed reacted with the lubricating oil in the pumps.

In early 1952, Tennessee Eastman replaced four of these pumps with two Worthington four-stage steam jet ejectors. Here's what Tennessee Eastman writes about the Worthington units:

"Since the ejectors use no lubricating oil, our difficulties have automatically been eliminated. The result is better yields, fewer shutdowns and less time required for both operation and maintenance."

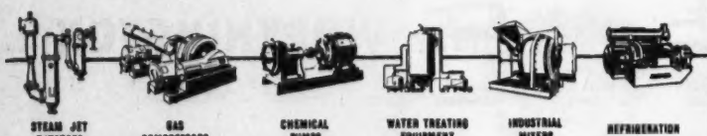
Tennessee Eastman's experience with Worthington steam jet ejectors has been duplicated by industrial firms throughout the nation. Whether your product is corrosive or non-corrosive, there's a Worthington ejector to fit your vacuum requirements—from atmosphere to 50 microns absolute. You can get a Worthington ejector in stainless, bronze, porcelain, impervious graphite, Worthite, cast iron, or steel.

Write us about your vacuum problems. Worthington Corporation, Steam Power Division, Ejector Section X.3.1, Harrison, New Jersey.

6 BIG ADVANTAGES OF STEAM JET EJECTORS FOR VACUUM SERVICE

1. *LOW INITIAL COST.*
2. *MINIMUM OPERATING COST.*
3. *NEGLIGIBLE MAINTENANCE COSTS.*
4. *NO MOVING PARTS.*
5. *EASY TO OPERATE.*
6. *AVAILABLE IN ANY MACHINABLE MATERIAL.*

X.3.1



WORTHINGTON

Steam Jet Ejectors

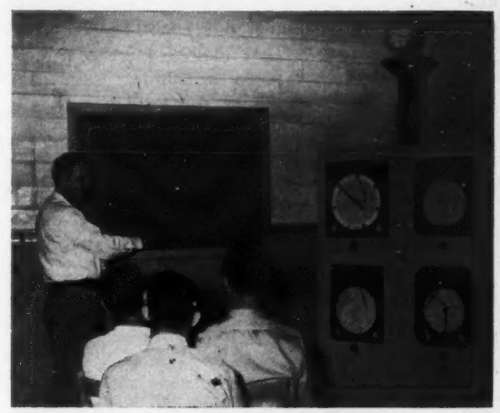
When inquiring check CP 2793 on handy form, pgs. 2-3

Where do instrument men come from? — Plant training programs . . .

here's the "what" and "how" of one chemical plant's system for training skilled mechanics

Heavier dependence on automatic instruments has shown proven advantages — but, these advantages can only be realized if instruments are kept in proper working order. Preventive maintenance programs can bog down or never become "preventive" if there are not enough instrument mechanics to go around.

Logical solution is training skilled labor within the plant. At American Enka Corporation, which uses the whole gamut of automatic instruments in their rayon production, such a program has been set up. Training program requires classroom. In this case, a well lighted and well ventilated instrument shop. Here work benches, test equipment, measuring standards, hand tools, and a variety of machine tools are available. And equipment also includes a panel



"Classroom" is part of regular instrument shop

consisting of a representative group of instruments used in training, as well as components for testing and repair in the shop. American Enka uses experienced employes for teachers, men who are particularly skilled. Field engineers of the different instrument manufacturers are periodically invited to instruct the class.

Men for the program are selected on the basis of interest and background. In general only men who apply (whether from inside or outside the plant) are taken for this work. Each trainee's progress and ability are carefully followed by supervisor.

Once underway, course consists of four principle phases. These are: orientation, shop training, field training, and outside study. Course is not "hard and fast", if trainee is judged to be proficient in any particular area, time spent on this may be shortened or even eliminated. There is no fixed training period. Average class may be as small as one or two men.

New course usually starts with a few days on safety rules, plant layout and process, location of facilities, and brief rundown of each type of instrument in the plant and its use.

Shop training includes instruction in use of equipment and tools as well as disassembly, repair, and assembly of instruments.

Instrument maintenance instruction begins with pressure gages. Student then moves on to pressure recorders. He is taught to isolate measuring, recording, and controlling systems. He is given the idea that each instrument is a composite of these three components. With this basis he moves on to study filled thermal systems, as well as bimetallic instruments.

In order to give student the "feel" of his work, he is given callibrations to work on, and spends some time changing adjustments on controllers located in two test baths in the shop. Here he learns the practical value of proportional band, reset rate, etc.

Outside training begins with the work "trouble shooting" in the shop. At the same time, he is sent out as helper to an experienced instrument man making repairs in the plants. Student is always permitted to diagnose and suggest necessary repairs on jobs like these.

Student's own notebook is supplemented with instrument manufacturers' service manuals and a complete file of instrument books. He is encouraged to study at home in instrumentation and related subjects.

By the time trainee has completed a "trouble shooting" phase, course is completed. While he usually still has much to learn about practical kinks, he is able to cope with usual work. American Enka Corporation is satisfied with their program — there is no shortage of instrument men there.

(Training program information was supplied by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa.)

Polyester rubber big news in wear resistance

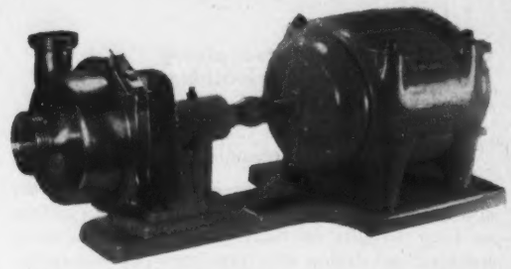
What may be the tire of tomorrow, outlasting the life of the car itself, and made of a synthetic rubber far removed from the conventional GR-S material of today, has been torture tested. A control tire was made of sections of the highest quality conventional natural-synthetic rubber stock and a new polyester rubber. Tire was put on a test car and put through 5000 miles of tortuous driving.

After checking the tread wear, the polyester sections of the test tire were found to have 2-5 times greater wear resistance than the natural-synthetic sections. Uses are also seen for the polyester in soles and heels, heavy duty conveyor belting, etc.

The polyester rubber is made from adipic acid and an ammonia derivative. Before the material can find wide use, however, the raw materials must first be produced economically and efficient processing methods developed. In addition, resilience and adhesion of the polyester must be refined.

(Polyester rubber was developed by the Goodyear Tire and Rubber Company, Dept. CP, 1144 East Market Street, Akron 16, Ohio.)

Here are the **PUMPS** that will handle ANY PRODUCT that will flow to them . . .



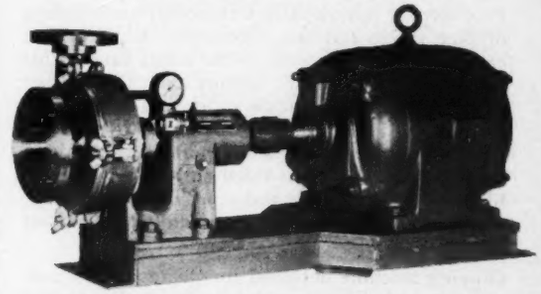
This model has been designed for the non-agitating, efficient pumping of milk, food products such as diced carrots, cream style corn, tomatoes, applesauce, relish and beverages. It is also practical in breweries and for the pumping of drugs and chemicals in solution.

Designed for very efficient operation at 1800 and 3600 RPM, and especially where high speeds are required, through heaters, coolers, filters, clarifiers, etc. The 3600 RPM model is especially applicable in the dairy industry, where high head and low capacity are essential and for handling low and medium viscosity liquids in the food processing industry.

ANY product that will flow to them can be handled efficiently and economically with Tri-Clover non-agitating centrifugal pumps. Illustrated are three of the many Tri-Clover pump models which are used for dairy and food processing, brewing and bottling, chemical and general industrial applications.

Designed for efficient liquid transmission and low cost maintenance, these pumps feature patented screw type impellers with sanitary impeller clips, inert carbon seals easily removed for cleaning, streamlined lightweight heads with a minimum of parts, and the exclusive Tri-Clamp casing construction which permits fast, easy pump assembly or disassembly.

Tri-Clover's exclusive developments are the result of over 30 years of specialized engineering experience and thorough knowledge of liquid handling. Let our engineering staff work with you in solving your pumping problems.



Here is the model that is in demand to pump Latex, water, brine, light oils, chemicals, paints, brewery products, and liquids in the food processing field where lines are of heavy I. P. S. type. This model offers quick disassembly features for ease in cleaning.

SEE YOUR NEAREST TRI-CLOVER DISTRIBUTOR

Tri-Clover® MACHINE CO. Kenosha, Wisconsin

TRIALLOY AND STAINLESS STEEL SANITARY FITTINGS, VALVES, PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL INDUSTRIAL FITTINGS AND INDUSTRIAL PUMPS

THE Complete LINE

P152-R

When inquiring check CP 2794 on handy form, pgs. 2-3

Ceramic coating of steel piping facilitated by dipping machine and drying unit . . .

equipment provides for close control of thickness and removal of moisture from inside pipe

To complete the sequence of operations for the successful application of porcelain enamel coatings to long lengths of black steel pipe, a dipping machine and drying unit have been put into operation. The first unit permits close control of the thickness of the coating while the second solves the difficult problem of removing moisture from inside the pipe after the initial application of the coating.

Now being used on the production lines, the two units prepare the pipe for fusion of the coating. Continuous fusion of the ceramic coating is accomplished by a special furnace. The two pieces of equipment solve several problems in handling of pipe prior to fusion.

Dipping unit is shown at right and drier at left

First step in operation is a thorough sandblasting of pipe inside and out. Next the "slip," or wet enamel, must be applied to the metal base. This "slip" is a water vehicle solution and can be either dipped or sprayed. However, manufacturer found that he could obtain uniform application and close control of thickness by using a dipping operation. Facilities had to be provided for coating pipe as long as 21′ both inside and out. In addition, provision had to be made for draining away excess material.

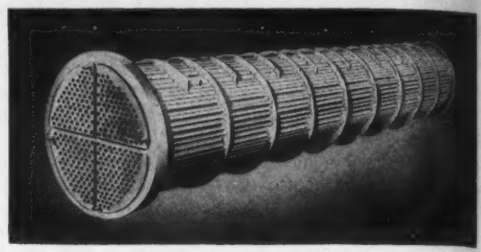
Dipping machine designed for this operation consists of two long troughs to hold the enamel solution. One trough contains ground coat material and the other the cover coat. Between these two troughs is a third shallow trough with fittings at each end, which is used for draining. Center trough is pivoted at one end and can be swung up to a 45° tilting position. At the same time, pipe held in this trough can be made to revolve.

Operation is to first place a length of pipe in one of the troughs containing liquid. Pump forces material through inside of pipe to prevent entrapped air pockets. Pipe is then lifted out of dipping reservoir and placed into draining trough. By means of a timing device, this trough is raised to tilted position, revolved, and held for a specified length of time before returning to horizontal for removal of pipe.

Cut cost and corrosion in the process with

ALCOA ALUMINUM

- Heat Exchanger Tubes
- Pipe
- Storage Tanks
- Tank Cars



ALCOA ALUMINUM HEAT EXCHANGER TUBES

Check these BIG Heat Exchanger Tube savings:

Fabrication . . . Their ductility makes them easy to roll in and bend.

Shipping and handling . . . Completed bundles weigh far less than bundles of heavy metal tubes.

Cleaning . . . Require far less cleaning than Admiralty tubes in furfural service. Aluminum does not catalytically polymerize furfural.

Low Temperature Service . . . Strength actually increases as temperatures drop to –320° F and below.

Original Cost . . . Alcoa Aluminum Tubes cost 1/2 less than Admiralty, 1/3 less than Mild Steel, 1/5 as much as Stainless. An average-sized refinery can save $50,000 in first cost by using Alcoa Aluminum Tubes (figured on 20,000 tubes) as this chart shows:

	PRICE PER 16 FOOT LONG TUBE			
	⅝″ O.D.x .049″ wall	¾″ O.D.x .049″ wall	¾″ O.D.x .065″ wall	1″ O.D.x .065″ wall
3S-H14	$1.17	$1.33	$1.62	$2.09
Alclad 3S-H14	1.49	1.73	2.04	2.69
Seamless Mild Steel	2.68	2.82	3.18	3.49
Admiralty Brass	2.95	3.53	4.39	6.10
Cupro Nickel (30%)	4.42	5.30	6.78	9.19
Stainless Steel (304)	8.61	9.67	11.38	13.73

Note: All prices are approximate. Prices for 3S-H14 and Alclad 3S-H14 based on lots of 2000-4999 lbs., for Admiralty and Cupro Nickel 5000 to 9999 lbs. Prices for Mild Steel and Stainless based on lots of 10,000 ft. with exception of size 1″ O.D. x .065″ wall which is based on 5000 ft.

Use Alcoa Alclad 3S-H14 Heat Exchanger Tubes with fresh, brackish and salt cooling waters.

Check These Heat Exchanger Tube Uses:

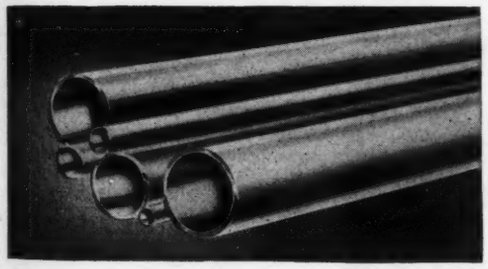
PETROLEUM

Amine solution coolers
Condensers handling hydrocarbon fractions from such processes as Thermal and Catalytic cracking, reforming, polymerizing, etc.
Furfural condensers and heat exchangers
Glycol-amine heat exchangers and reboilers
Hydrogen sulfide gas coolers
Jacket water coolers
Lean oil—rich oil exchangers
Lube oil coolers
Natural gas compressor aftercoolers
Propane chilling
Recompressor aftercoolers
Vapor recovery condensers
Wax sweaters

CHEMICAL

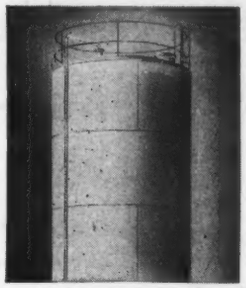
Acetaldehyde
Acetanilide
Acetic acid
Ammonia
Benzene
Butanol
Butyric acid
Dichlorobenzene
Ethanol
Ethylene Glycol
Formaldehyde
Furfural
Gelatin
Glycerin
Hydroabietyl alcohol
Hydrogen Cyanide
Hydrogen Peroxide
Isopropanol
Methanol
Naphtha
Nitric acid (concentrated)
Phenol
Propylene Glycol
Pyridine
Ricinoleic acid
Stearic, Palmitic, Maleic Oleic acids
Turpentine
Xylene
and many others

Alcoa pioneered aluminum heat exchanger tubes 44 years ago. Write for details and the booklet: *Alcoa Aluminum Heat Exchanger Tubes.*



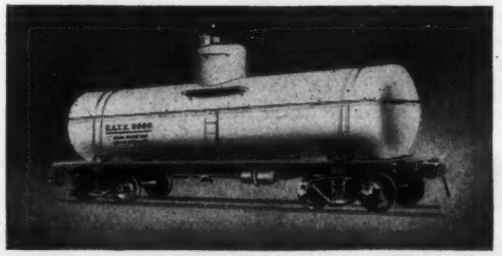
ALCOA ALUMINUM PIPE

Aluminum, of course, is highly resistant to attack by sour crude and most sulphur compounds . . . protects the quality of high-grade resin and other naval stores. It can be joined by every fusion process . . . is easier to handle and install because it weighs 1/3 as much as other materials. Its chemical inertness and corrosion resistance avoid batch and process contamination. High thermal conductivity and ductility speed filling of vessels with cold liquids. You get all these cost-cutting qualities when you use Alcoa Pipe in the processing field. Write for the booklet: *Alcoa Aluminum Pipe.*



ALCOA ALUMINUM STORAGE TANKS

For over 20 years Alcoa Aluminum has been in continuous service handling fatty acids in storage tanks. Aluminum protects the stability and color of essential oils, edible oils, fats, glycerine . . . resists the corrosive effects of sulphur . . . does not stain or discolor products handled . . . is nontoxic . . . inert to many chemicals . . . nonsparking. Write for the pamphlet: *Alcoa Aluminum in the Process Industries.*



ALCOA ALUMINUM TANK CARS

The first tank car of Alcoa Aluminum, in service since 1928, still hauls fatty acids . . . proof that aluminum resists corrosion, gives lasting service, doesn't contaminate its cargo. Leading shippers everywhere report: No damage to ladings . . . no damage to cars, when valuable liquids are delivered in Alcoa Aluminum Tank Cars. Ask your car builder about the advantages of lightweight aluminum rolling stock, or write to Alcoa.

ALUMINUM COMPANY OF AMERICA
902-H Alcoa Building, Pittsburgh 19, Pa.

For process chemicals—catalysts, catalyst carriers and desiccants—investigate ALCOA Chemicals

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 2795 on handy form, pgs. 2-3

Difficulty presented in removing moisture from inside of pipe is overcome by second piece of equipment. Problem was that air passing through inside of pipe quickly became saturated. As it traveled further, moisture condensed out in pipe. This water would wash unfired coating off of inside of pipe.

Drying apparatus which solved this problem consists of a series of 15 chambers mounted in rotary fashion. Each chamber can hold one length of pipe. Steam-heated air is introduced into chamber to flow through pipe. Dryer handles in excess of 4500 lineal feet of pipe per shift.

Of course, dipping unit, dryer, and furnace are but part of the entire operation. Other steps include formulation of glass, milling procedures, drain and setting wet "slip," fusing temperatures, and numerous other controls and techniques.

(Courtesy of Barrows Porcelain Enamel Co., 137 Pleasant Ridge Station, Cincinnati, Ohio.)

Supreme Court won't review earlier 'poly' decision

FDA's ban on the use of "poly" chemical softeners in bread will probably go into effect more quickly than anticipated. The situation was changed by a quick denial by the Supreme Court of applications for writs of certiorari filed by Atlas Powder Co., Wilmington, Del. and Glyco Products, Brooklyn, N. Y.

Both manufacturers sought review of a decision by the Third Circuit Court of Appeals unanimously upholding the FDA ban issued last May 12. Another case is still pending in the Eighth Circuit Court of Appeals. Research Products Co., Kansas City, Mo., another manufacturer of a polyoxyethylene monostearate emulsifier, also have legal action pending. The Eighth Circuit Court has granted a stay on the FDA ban, and the present Supreme Court ruling does not immediately affect this stay.

FDA says that the chemical "contains residues of known poisonous glycols" — that tests have not yet established that the use of treated bread is harmless to the human body.

Allows free passage of air, holds back moisture

A porous silicone-treated sheet material of nickel has been developed in response to the demand for a venting medium for enclosing delicate instruments. Material passes air freely, yet will not pass water at less than 3 psi differential.

Material is available in sheet form and can be cut to size and form required, subjected to mild forming operations, and can be welded to solid threaded components for fastening to equipment.

Silicone coating is believed to be permanent under ordinary service conditions.

(Development of Micro Metallic Corporation, Dept. CP, 30 Sea Cliff Avenue, Glen Cove, New York.)

Front and rear view of one mounting style of the Meriam Pressurized Manometer.
Now
MERIAM Pressurized MANOMETER
600 Inches of Mercury and
MANOMETER Accuracy

Now with manometer accuracy, absolute pressure, or gauge pressure up to 600 inches of mercury or water can be indicated by the direct reading Meriam Pressurized Manometer. As many as five points of unknown pressure may be indicated simultaneously.

The Meriam Pressurized Manometer may be applied to high pressures encountered in turbine engine development work, high torque, research, and for calibration purposes.

If you have a complex problem of critical measurement, we will be glad to share with you our more than 40 years of experience in supplying primary standards of measurement. Write us today.

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IN CANADA: PEACOCK BROS., LTD., MONTREAL

MERIAM ★ Instruments
ESTABLISHED 1911
MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 2796 on handy form, pgs. 2-3

instrumentation & control

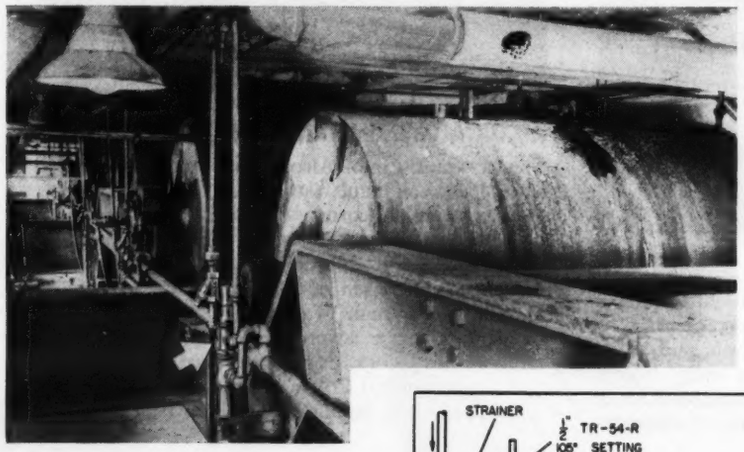
Now They Can Schedule *Ball-mill Grinding*

Regulating water jacket temperature produces consistent results . . . saves water bills, too

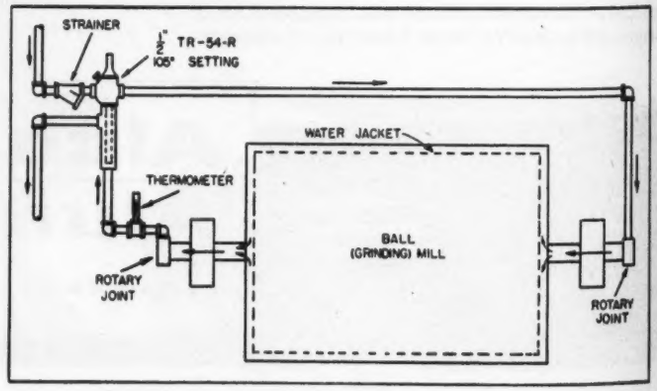
PROBLEM: Paint manufacturers use ball-mills for the combination job of grinding pigments and dispersing them in the paint vehicle. As in all grinding operations, heat is generated. It is necessary to water jacket these mills.

At Berry Bros. in Detroit, this cooling problem caused trouble. In the first place, manual control of jacket temperature was time consuming and far from perfect. They found that in extreme conditions (65°F or below) mill would produce virtually no grinding action. This meant that grinding time (dependent on jacket temperature) varied from batch to batch, since jacket temperature was not well controlled.

Solution: Experiments showed that optimum grinding was achieved at a temperature in the jacket of 105 to 110°F. Next step was to put a temperature regulator in the system. This regu-



Arrow points to regulator on foremost mill. Other mills and regulators can be seen in background



Schematic drawing shows how regulator controls jacket temperature

lator consists of liquid-filled bulb which positions valve stem-and-seats according to temperature. It is factory set to any temperature up to 210°F and can be adjusted by user in a 50° band.

Regulator is placed in the intake cooling water line so that valve action controls water throughput. Sensing bulb is placed in the return line and set for 105°F. Any deviation from the set point causes a change in water throughput.

Results: Now that cooling water is maintained at 105°F, grinding operations are not only faster but on a time-table basis. After a short trial run, a dozen of the mills were equipped with regulators. These have been operating since May, 1950.

Plant superintendent at Berry Bros. made some tests on these equipped mills and found that $40 to 45 dollars a month is being saved in reduced water consumption.

(Specific regulator in this case is TR-54-R, manufactured by Sarco Company, Inc., Dept. CP, Empire State Bldg., New York 1, N. Y. . . . or for more information reader may simply check CP 2797 on convenient Reader Service slip between pages two and three.)

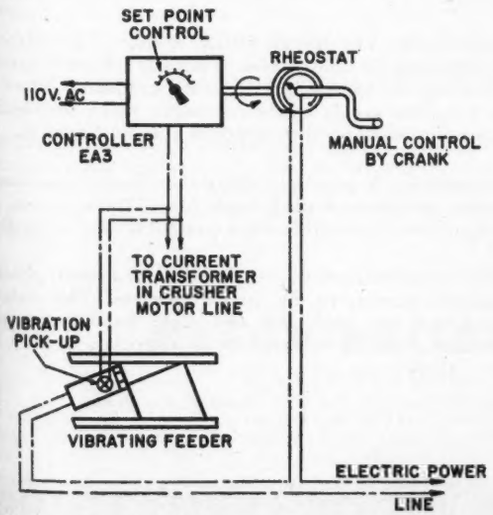
Keeps grinder or crusher loaded at optimum value — or holds feeder's rate constant . . .

vibrating feeder is final element of control system with unusual characteristics

Uses: Two general methods are employed in using the feed rate controller:

1) Controller may be set up to deliver material to a crusher or grinder at a varying rate such that the crusher is always kept loaded near its optimum value.

(*Continued on next page*)



Schematic diagram shows the principal parts of automatic feed rate controller

CONO CONTROL VALVES . . . for water treatment

SPECIFIED BY THESE FIRMS
(partial list)

American Cyanamid—Ion Exchange Div.
Belco Industrial Equipment Div., Inc.
Cochrane Corporation
General Filters, Inc.
Graver Water Conditioning Co.
Illinois Water Treatment Co.
Permutit Co.
Worthington Pump & Machinery Corp.

INSTALLED IN THESE PLANTS
(partial list)

Atomic Energy Commission	Arco, Idaho
J. T. Baker Chemical Co.	Phillipsburg, N. J.
Blockson Chemical Co.	Joliet, Illinois
Consolidated Edison Corp.	New York
Dow Chemical Co.	Freeport, Texas
Dow Chemical Co.	Velasco, Texas
Dow Chemical Co.	Pittsburg, Calif.
Gulf States Utilities	Baton Rouge, La.
Johns-Manville	Manville, N. J.
Penna. Power & Light	Shawmont, Pa.
Philadelphia Electric Co.	Schuylkill Station

Cono Controls

Cono Close Coupled Pneumatic Control Valves provide unbroken service day in, day out—year in, year out—in the automatic operation of demineralizers and other process systems. Hundreds of Conoflow valves, like those shown here, have been in operation many years without maintenance or repair. Cono Control Valves are available in assemblies for on-off service (guaranteed bubble-tight shut off) or for throttling control. Available with optional features such as handwheel type limit stops as shown, plastic position indicators, and micro-switch attachments for actuating remote visible or audible signals. Body sizes up to 12" in all materials—rubber lined, Saran lined, alloys, etc.

Write or phone for Conoflow's usual personalized attention.

CONOFLOW CORPORATION

Foremost Manufacturers of Final Control Elements

2100 ARCH STREET, PHILADELPHIA 3, PENNSYLVANIA

When inquiring check CP 2798 on handy form, pgs. 2-3

(*Continued from preceding page*)

2) Controller may be used as a closed loop system for maintaining amplitude of vibration stroke at set point — thus provides a reasonably constant flow rate through the feeder.

In either case the final control element (vibrating feeder) handles solid flowable materials from dusts up to heavy chunk minerals, etc. Feeders can be supplied for virtually unlimited capacities.

Features: Controller will accept one of two signals — either signal proportional to the amplitude of feeder's vibration (picked up by a dynamic sensing element) or a signal proportional to the current used by the crusher motor. Signals could also conceivably be used from other process equipment being fed. Continuous mixers, for example, might be fed by such a system.

Description: Controller is designed to operate from standard power sources with electric vibrating feeders. In operation, it compares an adjustable set point voltage with a signal voltage supplied by feeder's motion, or by the load imposed on equipment being fed. Controller's output is a rotary shaft motion used to drive a rheostat in the feeder power line. Rheostat is provided with a crank for manual control in emergencies.

Since control system is flexible, capacities from a few pounds per hour up to thousands of tons per hour can be handled.

System can only be used for automatic control of feed to crusher, etc, where loading characteristic of the crusher is suitable. Some grinding equipment, ball mills for example, draw less current when loaded fully and would not work with the system as shown. In general, grinding equipment must draw a higher current as it is more fully loaded in order to make operation automatic.

(Model EA3 feed rate controller is a development of the Jeffrey-Traylor Division, The Jeffrey Manufacturing Co., Dept. CP, Columbus 16, Ohio . . . or check CP 2799 on pages 2 and 3.)

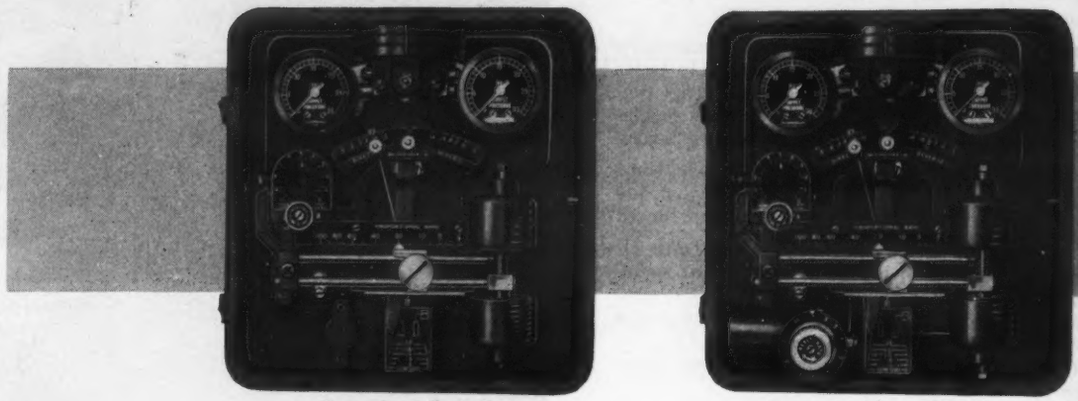
Listening to bearings, moving parts is sometimes the only way of checking . . .

maintenance men at large distillery use portable amplifier and probe when they're stuck

The large distillery of Joseph E. Seagrams Inc. at Lawrenceburg, Indiana has more pumps than many chemical plants. It also has its share of valves, machinery, etc. to be maintained. Instrument and maintenance men at the distillery worked out a stethescope-like gadget five or six years ago for listening to bearings, control valves, and other parts which produced a "different" noise when they were not operating properly. Their stethescope, made from an ear piece of the old desk-type telephone with a metal probe running through it and extending about ten inches, proved to be useful but was not particularly sensitive.

Just about a year ago they brought their stethescope situation up-to-date with electronics. They are now

NEW MASONEILAN 12000 SERIES Offer Accurate, Sensitive, *New Ease of Selection;*



Proportional Controller — Proportional-Reset Controller

These new controllers reflect a realistic blending of past experience and current design trends, combining advanced features which reduce weight, improve adjustability and increase ease of selection, installation and servicing.

Consider what these design improvements can mean to you . . .

UNIT CONSTRUCTION

Unit subassemblies of the control mechanisms (proportional, or proportional-reset, unit and level setting mechanism) are mounted on the mechanism bracket which is in turn rigidly attached, piloted and doweled to the torque tube housing. Thus, individual units are fixed in position, unaffected by possible distortion of the case, yet are readily removable for servicing or interchange. Other sub-assemblies (pilot and manifold) are mounted in the rugged aluminum case which is finished and gasketed for outdoor service. Cover is closed by a positive cam-type latch.

SIMPLE AIR CIRCUITS

The high-capacity, balanced, amplifying, pilot with frictionless floating-action valve and cleanable sapphire orifice, is connected to the forged brass manifold which contains most air passages. Tubing in the proportional controller is limited to two short lines. The nozzle is easily removable for cleaning, and after replacement requires no aligning. Special ring type adapters facilitate connections.

EASE OF ADJUSTMENT

Proportional band setting . . . is made on a rod-type cantilever spring by a self-aligning clamp tightened by a large knurled knob located in front of the mechanism. A four-inch direct reading scale indicates the setting.

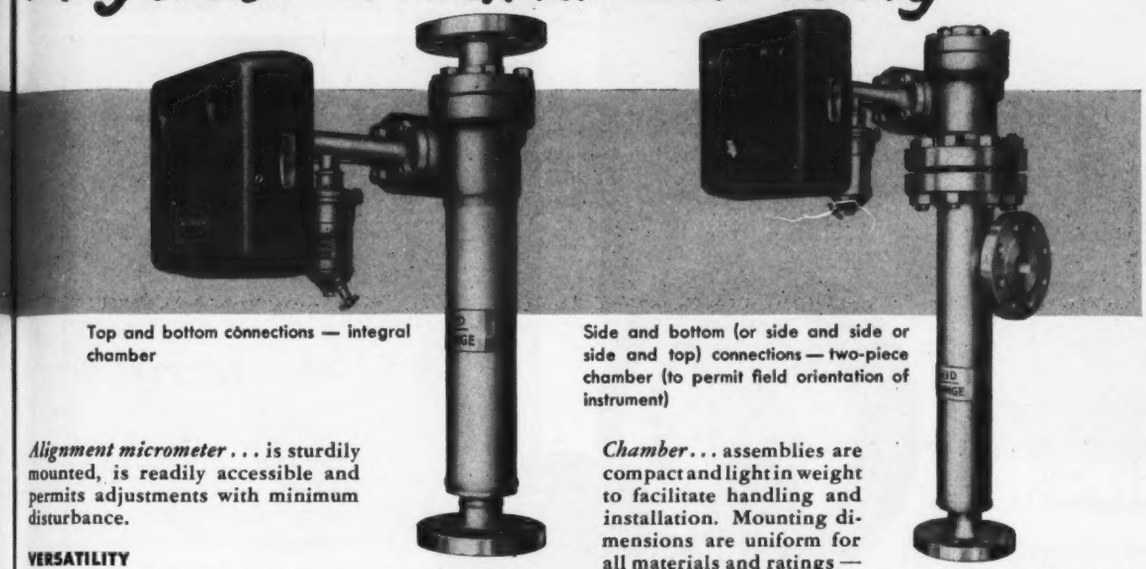
Control action and specific gravity setting . . . are selected by attaching the control link to desired side of reversing arc along the specific gravity scale, graduated from 0.5 to 1.4. The arc is easily reversible when instrument mounting is changed to opposite side of displacer.

Set point . . . is precisely adjustable throughout entire range by turning setting knob over 270° arc scale, 2" long. Scale is reversible when control action is changed.

Direct level indication . . . is provided by a sturdy pointer fastened directly to the torque tube rod. The scale is graduated for both left and right hand instrument mounting and for several specific gravities.

FOR A WIDE VARIETY OF APPLICATIONS

LIQUID LEVEL CONTROLLERS . . .
Dependable Control – plus
Adjustment and Servicing



Top and bottom connections — integral chamber

Side and bottom (or side and side or side and top) connections — two-piece chamber (to permit field orientation of instrument)

Alignment micrometer . . . is sturdily mounted, is readily accessible and permits adjustments with minimum disturbance.

VERSATILITY

The proportional controller . . . may be used as a *Transmitter* and can be converted in the field to a

Differential gap controller . . . by simply reversing position of the coil spring and bellows in the proportional unit; or

Proportional-reset controller . . . by interchanging the proportional unit and the proportional-reset unit.

STURDY, COMPACT, ACCURATE MEASURING UNIT

All parts of the *Torque Tube Assembly* are made of a single alloy, individual parts being welded to form an integral unit. Knife-edge bearings support both ends of torque tube. Torque tube housing is removable from mechanism chamber.

Stainless . . . steel tubing *Displacers* designed so that standard control mechanism can be used for all ranges, are attached to the torque arm by hangers with modified-knife-edge hooks. Hanger extensions may be integral or detachable.

Chamber . . . assemblies are compact and light in weight to facilitate handling and installation. Mounting dimensions are uniform for all materials and ratings — and are in whole numbers; on side-mounted types mounting dimensions equal level range.

VARIETY OF TYPES, MOUNTINGS, MATERIALS

Instrument Types include *Proportional, Proportional-reset, Differential Gap Controllers* and *Transmitters;* or any combination of two of these in larger case. *Mounting Types* include top and bottom, side and side or side and either top or bottom, with screwed or flanged connections; also top or side of vessel with flanged connections. Instrument mounting left or right of displacer.

Ratings up to 2500 lbs. ASA.

Materials include iron (14″ & 32″ only), steel or alloy chambers; stainless steel displacers; inconel (or wide selection of other materials) torque tube assemblies.

Ranges — 14″, 32″, 48″, 60″, 72″, 84″, 96″, 120″

Complete details sent on request. Address

ALL HIGH Quality Coefficient PRODUCTS

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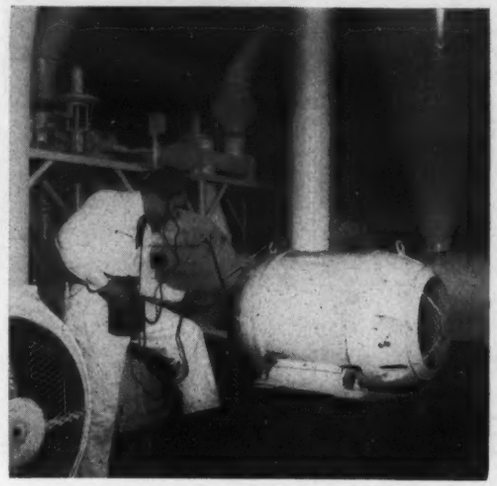
IN THE PROCESS INDUSTRIES

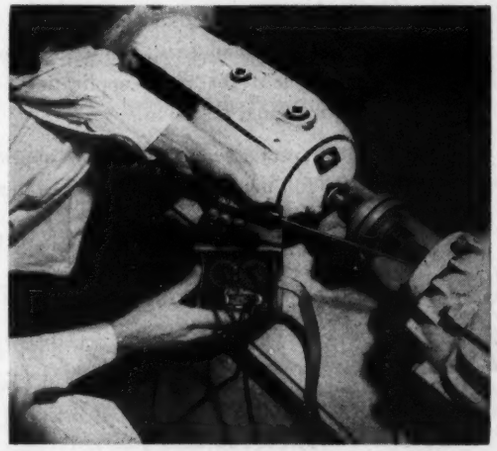
When inquiring check CP 2800 on handy form, pgs. 2-3

using a small portable amplifier with a probe and ear phones. Using this, it is possible to amplify mechanical noises in diagnosing trouble.

No cure-all, the instrument is used on tough problems rather than for routine checking. Seagrams men have found that localizing a sound requires a



Operator holds probe against motor surface near bearing and hears noise in ear phones



Close-up shows probe and amplifier controls

knack and that background noise is fatiguing when they are listening for intermittent symptom noises. None-the-less, in a typical case they found that a control valve suspected of being bad was operating satisfactorily and were able to trace the trouble to another portion of the line. They have found the amplifier useful on bearings, steam traps, and other moving mechanisms.

(Elec-Detec is a product of Anco Instrument Division, American Name Plate Manufacturing Co., Dept. CP, 4245 West Arthington Street, Chicago 24, Ill. . . . or for more information check CP 2801 on handy form, pages 2 and 3.)

accurate instrumentation need not be costly

here's proof . . . Accurate to ± 1% of full scale, this Fielden TEKTOLOG Electronic Recorder has a sensitivity of ± 0.1% and reproducibility of ± 0.5%. Yet it sells at a price substantially below that of servo-operated potentiometer-type recorders!

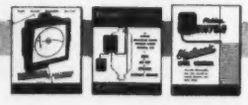
Reason: *Simplified* design, circuitry and construction. TEKTOLOG's recorder mechanism consists of only 4 principal units. By stressing *simplicity*, Fielden can bring you *all the accuracy you need* for most applications—without extra charges for marginal precision.

If simplified, practical instrumentation appeals to you, write us today for full details. There's no obligation.

DOLLAR FOR DOLLAR—YOUR BEST INSTRUMENT VALUE

Fielden

INSTRUMENT DIVISION



ROBERTSHAW-FULTON CONTROLS COMPANY
2920 N. 4th St., Dept. G, Philadelphia 33, Pa.

Send full details of Fielden simplified ☐ TEKTOLOG Electronic Recorders
☐ TELSTOR Electronic Level Indicator ☐ TEKTOR Electronic Level Control

*Name*_____

*Title*_____

*Company*_____

*Address*_____ *City*_____ *State*_____

Fielden TEKTOR Electronic Level Control

Fielden TELSTOR Electronic Level Indicator

When inquiring check CP 2802 on handy form, pgs. 2-3

½ psi in gage case opens safety plate away from face . . .

operator protected by gage for service in range from vacuum through 100,000 psi

Uses: Pressure gages are available in many ranges. Standards include 15 psi, vacuum, pressures up to 100,000 psi, compound gages, and suppressed zero gages.

Features: Back plate of gage is designed to open if pressure in gage case rises ½ psi.

Description: Specially designed for safety in high pressure operations, pressure gage has integrally cast solid wall separating dial from gage movement tube. Double spring-mounted safety release plate covers entire back of case. Plate

Teflon coated back case plate is retained by small knurled knob

permits discharge of pressure away from viewer. This plate is Teflon coated, thus cannot be painted closed or adhere to gasket. It is retained by a small knurled knob.

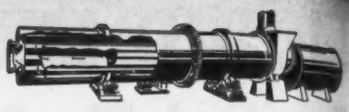
Gage sizes include 4½, 6, and 8½-inch diameters. Wide selection of Bourdon tube materials and case designs is available.

(Ashcroft Maxisafe Duragauge is a product of Manning Maxwell & Moore, Inc., Dept. CP, Stratford, Conn. . . . or for more information check CP 2803 on convenient Reader Service slip between pages two and three.)

Touch of a bar prints weight (1/10 of 1% accurate) on tape, ticket, card, etc . . .

electrical (with and without explosion-proofing) or manual crank instruments are built

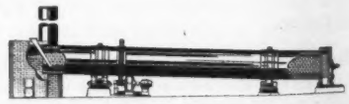
Mechanical weight recorder is built in as an integral part of tape-drive scale head. Located on the right-hand side of dial head, printer operates at a touch of push bar. Within one second after this bar has



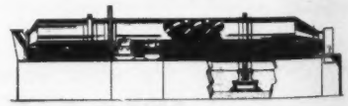
DOUBLE SHELL DRYERS

SINGLE SHELL DRYERS

RUGGLES-COLES
CONTINUOUS ROTARY DRYERS, KILNS, AND COOLERS



ROTARY KILNS



ROTARY COOLERS

Ask for Bulletin 16-D-13 which describes the entire Ruggles-Coles line

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COMPANY, INCORPORATED
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When inquiring check CP 2804 on handy form, pgs. 2-3

been depressed, printed record of the weight is made. Printing action can be controlled by a trip switch on conveyor line, monorail, etc.

Furnished to handle a wide variety of record forms, printer can accommodate standard straight ticket, ticket and tape, odd-size tickets with identifiers. Manual or electric time and date stamp can be incor-

Photo shows mechanical printer attached to right-hand side of scale's dial head

porated as well as consecutive numbering devices. Integrator may be built into the unit to also show totalized weight on printed record. Accuracy is about 1/10th of 1% of the dial chart capacity.

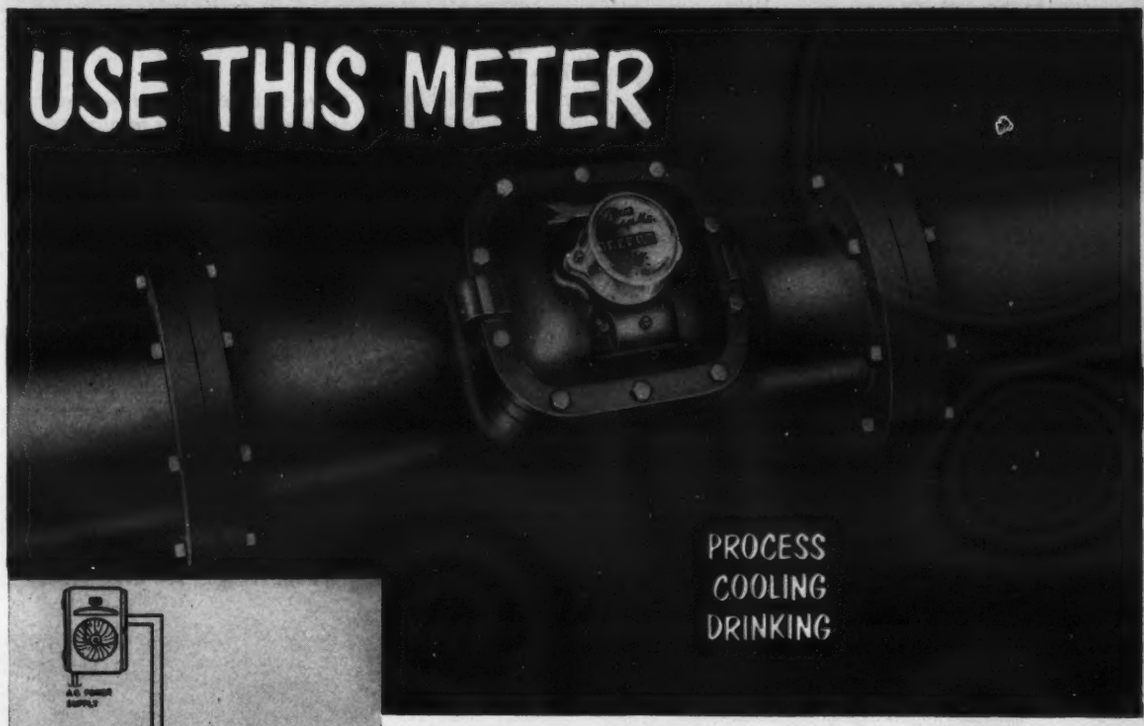
Printer is normally arranged with a motor to operate on 110 v 60 cps (other power supplies optional). It can be adapted to operate with a hand crank for use where electric current is not available or where explosion hazards are present. Explosion-proof motor and switch can be substituted, however, for regular electrical components.

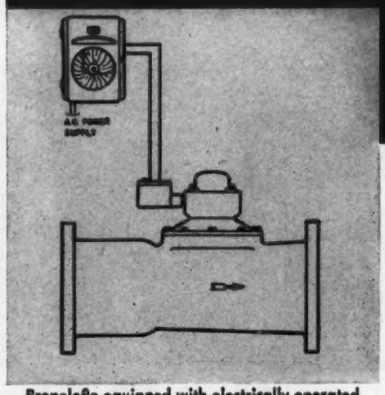
(Mechanoprint is a development of The Howe Scale Co., Dept. CP, Rutland, Vt. . . . or for more information check CP 2805 on handy form, pages 2 & 3.)

Explains operation of transmitter

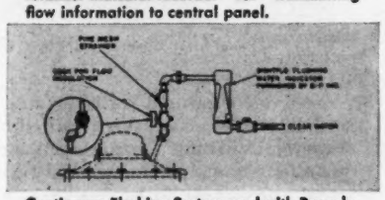
Pneumatic transmitter for measurement of pressure or differential pressure is fully explained in 16-page, 2-color bulletin. Engineering drawings, photographs, perspective drawings, and schematic diagrams are used to illustrate every phase of operation of the instrument. Color coded cut-away diagram helps to illustrate sequence of operation. Recommendations are made for various types of use including flow, liquid level, and pressure measurement with this transmitter.

Bul 420-1 is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 2805A on handy form, pages 2 and 3.

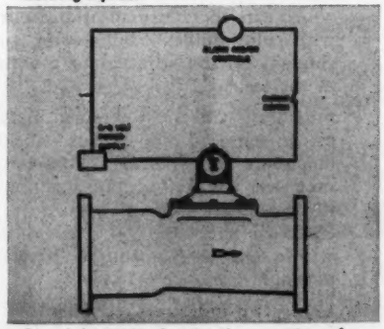




Propeloflo equipped with electrically operated totalizer-indicator-recorder for transmitting flow information to central panel.



Continuous Flushing System used with Propeloflo Meter when metering corrosive or sediment-bearing liquids.



Propeloflo with electric alarm register for measuring predetermined quantities of liquids in "batch" processes.

Builders Propeloflo Meter—the modern propeller-type meter — gives the gallon-by-gallon story on water consumption . . . helps keep water costs down by showing *where* water is used and *how much*. The Propeloflo is widely used for checking water consumption by departments, buildings, processes, areas, etc. This meter is as easy to install as a valve or fitting and requires no external power connections. It totalizes flow on its six-digit counter directly in gallons or other volumetric units. Furnished for pipelines 2" to 36" and larger.

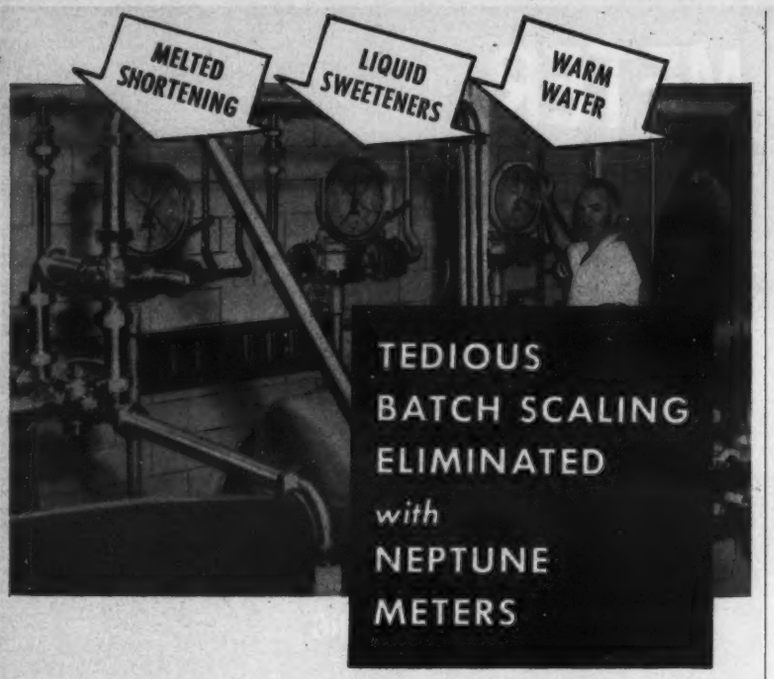
BUILDERS
(DIVISION OF B-I-P INDUSTRIES)

SEND COUPON FOR DETAILS

BUILDERS-PROVIDENCE, INC.
387 Harris Ave., Providence 1, R. I.
Please send Bulletin 380-K4 describing Builders Propeloflo Meter.

Name.....
Company.....
Street.....
City.....*State*.....

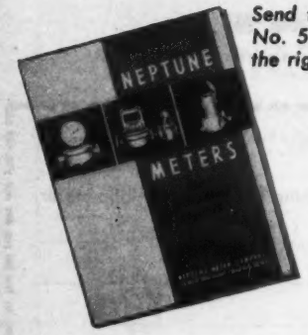
When inquiring check CP 2806 on handy form, pgs. 2-3



With this ingenious homogenizing system, First National Stores, Inc. pre-mixes salt, sugar, milk, shortening and water into an emulsion that can be pumped easily to their bread mixers. These pre-mixed batches are big, working from whole bags or drums of dry ingredients, with Neptune Auto-Stop meters automatically, accurately delivering the right amount of water, melted shortening and liquid sugar to the pre-mix tanks.

The system eliminates tedious batch scaling, produces more uniform quality by eliminating human errors, saves ingredients that adhere to scaling buckets, tightens up on inventory control, and saves time lost in cleaning up.

Start you thinking? Let your imagination tour your plant. Aren't there several spots where accurate liquid metering can speed up batch mixing, simplify processing control, wipe out spoilage or spillage, or keep tabs on liquid inventories and costs? Ask our field engineers for ideas—put over 60 years of experience with more than ten million meters to work for you.



Send for new Industrial Meter Bulletin No. 566-N P — it shows how to select the right meter for your process.

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When inquiring check CP 2807 on handy form, pgs. 2-3

INSTRUMENTATION

0 to 100 scale used for indicator makes it a handy miniature for general work . . .

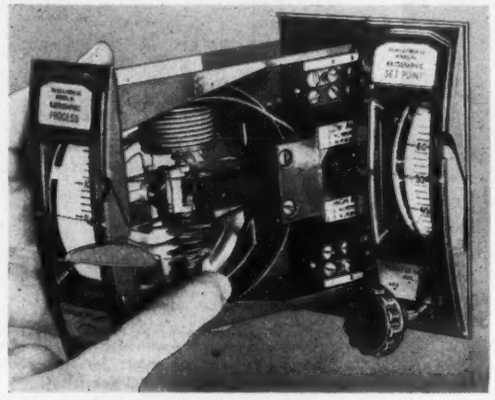
adjustable color guides, together with alarms, adapt it to special jobs, too

Uses: General purpose miniature indicator is suitable for either graphic panel or conventional panel mounting.

Features: Total scale length of 5-¾ inches is calibrated from 0 to 100. Scale is positioned by pneumatic signal.

Description: Scale of pneumatic indicator is mounted on a rotating drum positioned by pneumatic signal from any remotely located primary or secondary instrument. Drum-scale rotates just behind fixed horizontal reference line and can be read with an accuracy of 0.5% of full scale.

Variety of alarm devices and operating guides can be incorporated. Combinations of visual and audible alarms are available to keep continuous



Panel-front dimensions: 2⅜ x 5⅜ inches

check on measured variable and warn operator when variable is outside required operating limits. Various warning arrangements are available: a continuous strip having four distinctive widths that correspond to successive 25-unit segment of scale; adjustable color guides to indicate over or under-range readings; automatic alarm contacts which can operate in addition to or in conjunction with color guides. Both color guides and alarm contacts can be adjusted to monitor any segment of the scale.

Full scale travel is obtained between 3 and 15 psi on standard models, but several other pressure ranges are also available. Phosphor bronze bellows, mounted within drum, positions the drum to proper reading behind horizontal reference line. Pulsation snubber is located on transmission line within the instrument to prevent erratic scale motion.

Using two indicators combined with loading regulator, transfer valve, and gage function switch, indicating control selector station is obtained for use with point-of-measurement controllers. One indicator then reads "process variable", second

Get the Facts!

about WATER HAMMER
and how you can
ELIMINATE THIS COSTLY NUISANCE
with

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Silent
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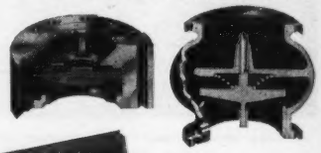
Yes—you can put an end to costly, dangerous water hammer in your piping system—NOW—with Williams-Hager Flanged Silent Check Valves. Compact and durable, they can be installed without special tools—in any position. Built for years of silent service, they are available in standard pipe sizes from 1" to 20". Investigate today!



WRITE FOR BULLETIN WH-851

This bulletin contains all the facts about water hammer—its cause, effect and control. Write for your copy!

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THE WILLIAMS GAUGE CO., INC.
3015 Pennsylvania Ave., Pittsburgh 33, Pa.

MAIL THIS COUPON TODAY

THE WILLIAMS GAUGE CO., INC.
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Please send a copy of Bulletin WH-851 on "Water Hammer, Cause, Effect and Control in Piping Systems."

NAME_____
TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE____

When inquiring check CP 2808 on handy form, pgs. 2-3

indicator reads signal going to valve or controlling device. Knob of valve-signal indicator operates a transfer switch. Using this set-up operator can also receive at indicator a set point signal from process controller and can reset controller remotely. Thus, three different functions can be followed with a pair of indicators combined with these standard components.

Miniature indicator is 5-3/8 x 2-3/8 x 7-3/4 inches deep. Instrument can be removed from panel in one operation as all electrical and pneumatic connections are of plug-in type. When instrument is removed from case pneumatic signal line seals itself with a ball check valve.

(General purpose miniature indicator has been developed by Fischer & Porter Co., Dept. CP, 11 Jacksonville Road, Hatboro, Pa. . . . or for more information check CP 2809 on handy form, pages 2 and 3.)

Senses position accurately for weigh control . . .

operates with differential transformer to indicate weight, thickness, strain, etc

Uses: Indicator (and on-off controller) measures deflection or strain and can be used in various ways. Thickness control and weight control are typical examples.

Features: System of measurement has an overall accuracy of 2% with linear displacement ranges of ± 1/10 inch to ± 100 micro-inches.

Description: Strain indication is made by a calibrated meter in front panel of instrument. This reads in fractions of an inch (or micro-inches). Relays of the instrument are independent of the meter and are located inside case which may be locked. Calibrating push button is also located on panel.

Instrument can be used for continuous or interval gaging, though strain gages or differential transformers converted for use in thickness-of-web control or for weight control. Used as a weight indicator and controller, instrument sensing pickup is attached to a member which deflects in proportion to applied load.

Power requirements are 90 watts at 115 volts 50/60 cycles. Single-pole, double-throw control relays handle 10 amp resistant load at 110 v AC. Entire unit measures 14 x 8¼ x 10⅝ inches and weighs 35 pounds.

(Myke-A-Trol Model 137 is manufactured by Industrial Electronics, Inc., Dept. CP, 8060 Wheeler St., Detroit 10, Mich. . . . or for more information check CP 2810 on handy Reader Service slip, pages two and three.)

NOW...fast, accurate transmission of DIFFERENTIAL PRESSURE MEASUREMENT with the Ashcroft Pneumatic Transmitter

Thousands of Ashcroft Pneumatic Transmitters are accurately measuring *straight pressures* in processing plants everywhere. Now, coupled with an exceptionally rugged differential pressure cell, the Ashcroft Transmitter assures the same standard calibrated accuracy of ½ of 1% in measuring *differential pressures.*

The Ashcroft Pneumatic Transmitter with Differential Pressure Cell is ideal for oil refineries, chemical plants or wherever it is good safety engineering to confine inflammable, poisonous or corrosive liquids or gases close to their source—away from control centers.

This new combination provides a durable and dependable system suitable for static pressures up to 4500 psi. It operates on low-pressure air—transmits proportionate air pressure to one or more pressure-actuated receiving indicators, recorders and controllers up to 1000 feet away. Response is fast—only 3 to 10 seconds for full scale change.

Installation is easy and economical. Low-cost, small-diameter piping is used. You avoid expensive high-pressure lines and fittings and all their leakage and maintenance problems.

Learn all about the basic types and differential pressure ranges in which the Ashcroft Pneumatic Transmitter with Differential Pressure Cell can be supplied. Write for Bulletin 330.

1850 ASHCROFT U.S.A.

YOUR INSTRUMENT DISTRIBUTOR makes it his business to keep up with all that's new in process equipment. Call on him for practical counsel, efficient service and products you can depend on to save time, effort and money.

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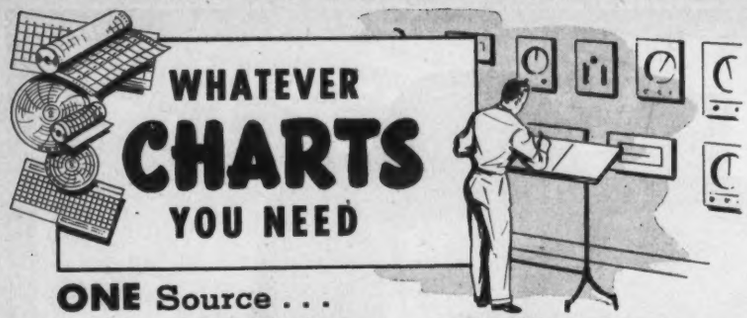
When inquiring check CP 2811 on handy form, pgs. 2-3



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When inquiring check CP 2812 on handy form, pgs. 2-3

JUST SET THE DIAL . . . THAT'S ALL

HOW TEE-PAK COMPANY KEEPS PRODUCTION FLOWING SMOOTHLY

. . . with Kates Regulators

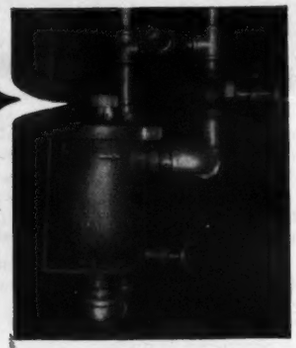


Photo shows Transparent Package Company installation of No. 4GA Kates Regulator on process control line.

Manufacturing sausage casing calls for extremely accurate control of water used to wash the casing as it comes from the drawing operation. At Transparent Package Company—leading manufacturer of casing and other packaging materials—engineers were constantly faced with the problem of keeping the casing washing water flowing at the necessary rate.

After trying several other methods, company engineers ordered two No. 2GA Kates Flow Regulators in June, 1951. Performance of these was so effective and satisfactory that the number of units used throughout the plant has subsequently been drastically increased and company engineers are now considering the application of other Kates Regulators to the problem of controlling other treating solutions. Actual service has proved that Kates Regulators provide process control at a cost far less than would have been required by any other method of regulation.

Unlike other methods, the exclusive direct-action principle employed in self-contained Kates Regulators needs no auxiliary devices to operate the control valve. Fluctuations in either inlet or back pressure cause the valve to adjust itself instantly, increasing or decreasing flow in order to maintain a constant rate. There is never any "lag" or "hunting." Available with capacities from 0.1 to 100 GPM.

For complete details and diagrams, write for Catalog 521.

the W. A. Kates Co. 430 WAUKEGAN RD. • DEERFIELD, ILLINOIS

Representatives in Principal Cities

When inquiring check CP 2813 on handy form, pgs. 2-3

INSTRUMENTATION

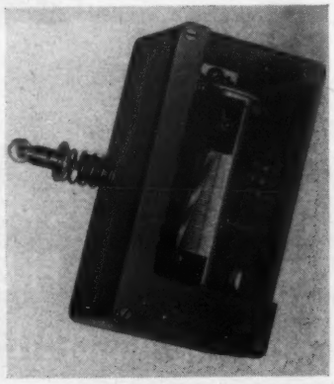
Continuous signal shows position in ½-inch . . .

plunger potentiometer has rugged construction

Uses: Potentiometer is ruggedly built and can be used for measurements of position in linear motion. Cam system adapts it to sensing position of any slowly rotating member also.

Features: Roller-type cam follower requires only ½" linear movement for complete traverse of 10,000-ohm potentiometer.

Description: Vitreous enameled resistance element and precious metal sliding contact are protected by oil-tight enclosure with external mounting holes. Overall dimensions including plunger roller are 8½ x 4½ x 7⅞" high.



Has oil-tight enclosure

(Plunger potentiometer is a product of Ward Leonard Electric Co., Dept. CP, 115 MacQuesten Parkway South, Mount Vernon, N. Y. . . . check CP 2814 on form, pages 2 and 3.)

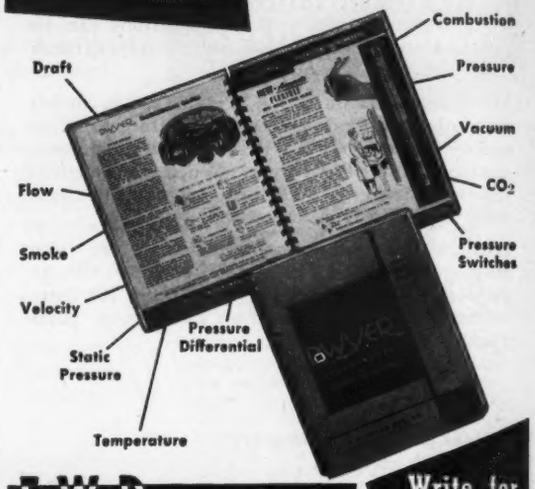
Contains table of data on air transmitters

Illustrated four-page bulletin gives table detailing range and materials of construction for pneumatic pressure transmitter. Instrument itself is pictured and described — engineering drawings are provided.

Bul 1731 is issued by Moore Products Co., Dept. CP, H and Lycoming St., Philadelphia, 24, Pa. When inquiring specify CP 2815, pages 2 and 3.

NEW— Instrument Data Book

Just off the press — 60 pages of Dwyer Precision instruments for checking combustion, draft, pressure, vacuum, flow, static pressure, velocity, CO_2, smoke, temperature and other media.



F. W. Dwyer Mfg. Co.

335 South Western Avenue
Chicago 12, Illinois

Write for Your Copy Today!

When inquiring check CP 2816 on handy form, pgs. 2-3

All-Electric Floatless LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 2817 on handy form, pgs. 2-3

Looks ahead and initiates control action on heaters for "smooth" temp . . .

built-in network anticipates change, allows indicating controller to hold temp constant

Uses: For indicating and controlling temperatures within the pyrometric range up to 3600°F.

Features: Controller employs an "anticipating" action — a movement of 0.006" by indicating needle will produce control action.

Description: Pyrometer controller employs simple electronics circuit which operates without physical contacts. Frequency of oscillating current flowing in two coils is picked up by a metal flag

Range extends to 3600°F

attached to set point indicator. Coils change position with temperature indicator and have their frequency changed when they come into proximity of metal flag. Frequency change is used to de-energize and open relay contact.

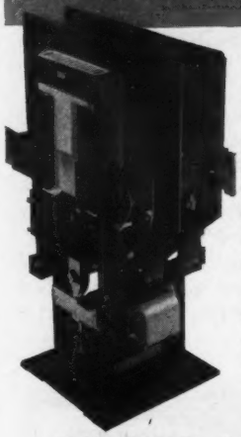
Unit employs proportioning control with 0 to 100% modulation throughout 2% of scale length. Six models provide for on-off, anticipating, and proportioning control with snap action or mercury switches. Anticipating model (Model 221C) produces "straight line" control. This instrument uses a resistor network and relay circuit which anticipates approach and departure of temperatures caused by various heat transfer lags and load requirements.

Thermocouple or resistance bulb may be used as the sensing element. When resistance bulb is used, a standardizing unit is added to instrument.

(Model 200 series Capacitrols are the products of Wheelco Instrument Div., Barber-Colman Co., Dept. CP, Rockford, Ill. . . . or for more information check CP 2818 on handy form, between pages two and three.)

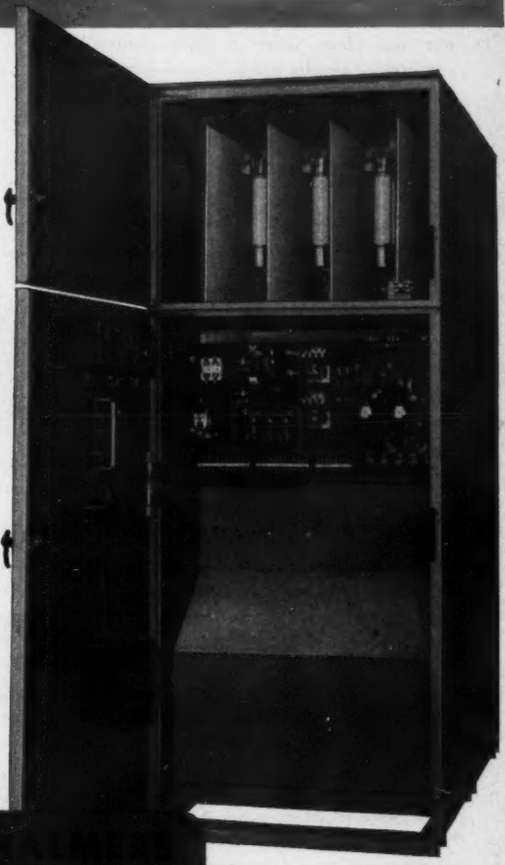
which contactor meets your needs AIR or OIL?

Either may be built into your Allis-Chalmers Type H starter along with meters, overload relays, current limiting fuses, auxiliary switches . . . the coordinated components dictated by your application for complete protection of man, motor and machine.



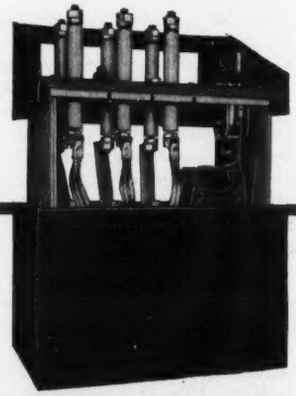
AIR-BREAK CONTACTOR

When the going's rough . . . that's the place for the Type 256 air-break contactor. Frequent starting, inching, reversing or dynamic braking are taken in stride by this rugged performer. And, of course, fire hazard is greatly reduced. No turning shafts, shaft bearings and flexible leads to cause maintenance headaches. Double-break contacts, vertical action and dual blowouts provide long, trouble-free operation.



OIL-IMMERSED CONTACTOR

Got atmospheric troubles? The Type MO oil-immersed contactor will perform heavy duty starting service in dust-laden, corrosive and very moist atmospheres. Contactor is of the time-proved clapper type. Self-cleaning, rolling-wiping action extends contact life. Make and break arcing occurs only on tips. Self-aligning E type magnet provides perfect armature seating . . . long, quiet operation. Permanent windlass tank-lifter simplifies maintenance. A-4103



Type H Starters

Call Your Nearby A-C Representative or Write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6410B.

ALLIS-CHALMERS

When inquiring check CP 2819 on handy form, pgs. 2-3

made right to work right

BENDIX-FRIEZ

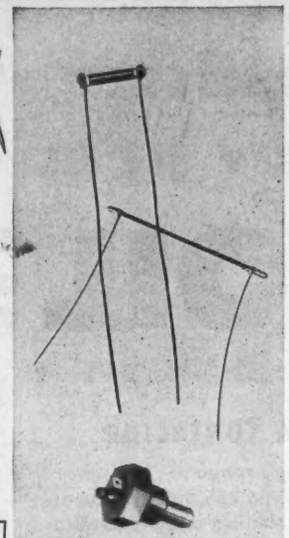
high-precision thermistors

Whether you use these temperature responsive resistors in standard or special models, you can be sure of this. *They'll match your needs* for resistance values, size, temperature coefficient, mountings and quality. Made in our own plant under carefully controlled conditions, Bendix-Friez Thermistors know no equal.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ −30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

Write for details.



Used in this typical application for sensing the temperature of hydraulic oil.

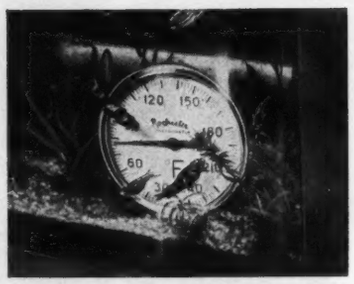
FRIEZ INSTRUMENT DIVISION of . .
1450 Taylor Avenue, BALTIMORE 4, MARYLAND
Export Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.

Bendix AVIATION CORPORATION

When inquiring check CP 2820 on handy form, pgs. 2-3

Prevent thermometer fogging

No matter how long you dunk it, you can't cloud the accuracy of a Rochester dial thermometer.



THIS SUBMERSIBLE QUALITY is important to you. It means fast, easy temperature readings . . . without any danger of a foggy crystal causing inaccuracy. Rochester dial thermometers are assembled and hermetically sealed in a special humidity-controlled "dry" room. This eliminates any possibility of condensation inside the thermometer.

ALL STAINLESS STEEL CONSTRUCTION— All outer parts (except crystal) of Rochester dial thermometers are stainless steel. What's more, the case, stem and nut are fused into a single *corrosion-resistant* unit by an exclusive Rochester welding process.

EXCLUSIVE OUTSIDE RECALIBRATION— Rochester makes the *only* industrial thermometer that can be recalibrated from outside the case. If an extremely hard blow should knock it out of adjustment, you can have it back on the job in less than a minute . . . without taking the thermometer apart or breaking the hermetic seal.

You can order Rochester thermometers from one of our specialized instrument representatives listed in Sweet's Catalog. Or write direct for full details.

MILLIONS of Rochester dial thermometers are now delivering dependable service.

Rochester Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.
DIAL THERMOMETERS GAUGES AMMETERS

When inquiring check CP 2821 on handy form, pgs. 2-3

INSTRUMENTATION

Puts eight-digit figures on paper at clip of 150/sec . . .

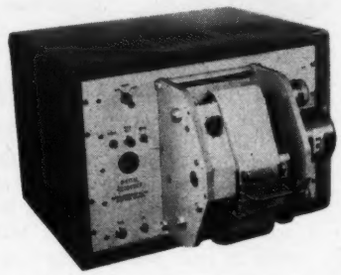
can be used, of course, with small numbers, low speeds

Uses: For high-speed, permanent recording of data at rates up to 150 eight-digit numbers per second.

Features: Designed for use with manufacturer's counter-chronographs, frequency-time counters, scalers, or similar equipment which provides binary-coded decimal indication.

Description: Data is recorded on electrosensitive paper of the Western Union "Teledeltos" type by groups of four styli. Each stylus in group corresponds to a lamp in 1-2-4-8-binary readout.

Intermittent drive system provides paper advance controlled by data input. This action is



Recorder has up to 32 channels

taken at recording speeds below 10 per second, in order to conserve paper and improve readability. Where data is recorded at a higher rate, paper speed (continuous drive) is adjustable from 2.5 inches per second. Standard paper roll, (400 feet long) allows 50,000 recordings to be made without reloading.

Standard models of digital recorder are in production with 20, 26, or 32 styli. Any number of channels up to 32 can be made available on special order. Dimensions are 17⅛ x 12¼ x 16¾ inches. Power required is approximately 300 watts.

(Model 960 Digital Recorder is manufactured by Potter Instrument Co., Inc., Dept. CP, 115 Cutter Mill Road, Great Neck, N. Y. . . . or for more information check CP 2822 on handy form, pages 2 and 3.)

Wallace & Tiernan

MASSOMETER

FOR METERING FREE FLOWING SOLID MATERIALS

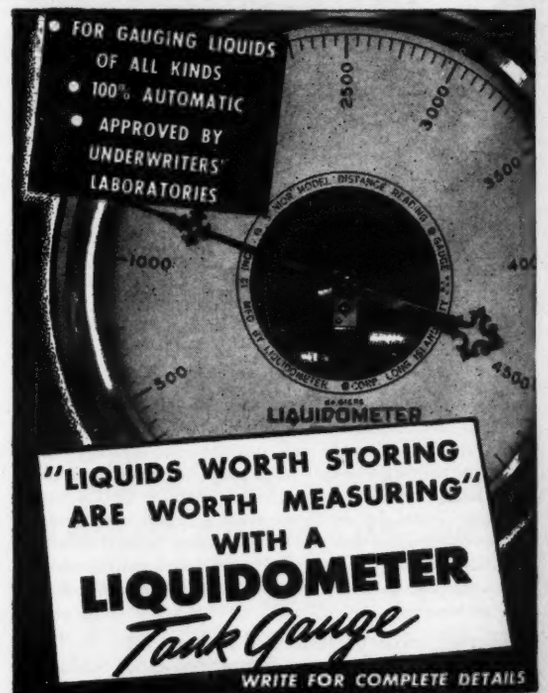
Pneumatic Recording
•
Maximum Capacity 225 lb. per min.
•
Accuracy ±1%
•
Overall Height—24½ in.

M-28

Write today for Description

WALLACE & TIERNAN COMPANY INC.
25 MAIN STREET, BELLEVILLE 9, N. J.

When inquiring check CP 2823 on handy form, pgs. 2-3



"LIQUIDS WORTH STORING ARE WORTH MEASURING" WITH A **LIQUIDOMETER** *Tank Gauge*

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

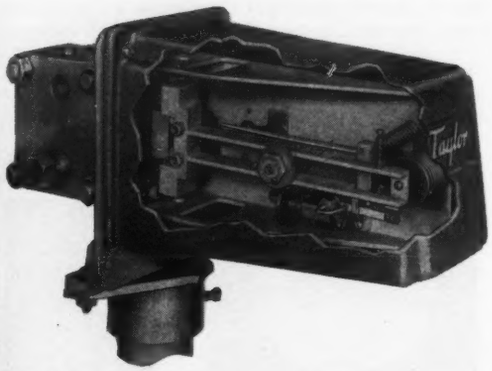
When inquiring check CP 2824 on handy form, pgs. 2-3

Diaphragm of transmitter will stand 1500 psi without rupture

Uses: Transmits pneumatic signal in usual 3-15 psi range. Full scale differential pressure for one model is 20-200 inches of water and for another is 80-800 inches of water.

Features: Primary element of the transmitter is Teflon-coated, glass fabric diaphragm. Inner housing of this unit is shaped to the contour of diaphragm permitting full over-range protection of 1500 psi to either side of diaphragm.

Description: Force balance transmitter can be used to measure flow of liquid, steam, or gas. It may also be used in measurements of liquid level or specific gravity. It has two basic units, the



63.2% of full scale change accomplished in one second

primary containing diaphragm and housing, secondary containing pneumatic force balance transmitting system.

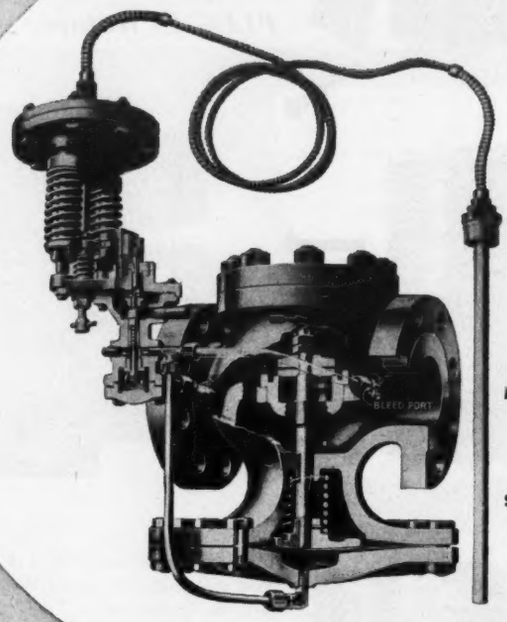
Primary unit is forged steel or stainless steel (type 430). Secondary unit is completely enclosed by gasketed cast aluminum cover and is self-purged to keep out corrosive vapors, dust, etc.

Two ½-inch pressure taps are located on both high and low pressure sides so that transmitter is fully adaptable for various types of service. Compact design (14½ x 6 x 7⅜ inches) permits close coupling. In most cases fluid to be measured can be introduced into the meter body.

Ten-to-one continuous range adjustment is accomplished by positioning range adjustment slide. This is marked. Zero adjustment can be made with knurled knob. Built-in damping device provides true average of reading and makes for pneumatic stability. Air consumption is 0.4 scfm providing response speed of 63.2% of full scale in one second with 50 feet of ¼-inch tubing. Transmitter will operate with fluids up to 300°F, but max ambient case temp is 180°F. Accuracy is within 1% of range. Unit weighs 23 lbs.

(Transaire Differential Pressure Transmitter is a development of Taylor Instrument Co., Dept. CP, 95 Ames St., Rochester 1, N. Y. . . . check CP 2825 on form, pages 2 and 3.)

3 Reasons for Accurate Regulation



PACKLESS CONSTRUCTION

LARGE BALANCED METAL DIAPHRAGM

SENSITIVE PILOT

Spence

Packless construction eliminates the need for closely fitted parts that may stick or bind due to dirt or uneven expansion of the parts.

In Spence Temperature Regulators, the Main Valve is actuated by a large balanced metal diaphragm which responds to the slightest changes in temperature.

Sensitive Pilots are designed to limit heater pressure to an adjustable maximum. As the temperature at the thermostat drops a few degrees there is a corresponding increase in steam pressure up to the limit for which the Pilot is set.

With regulators that respond only to temperature, an increase in load is accompanied by a momentary decrease in steam pressure caused by faster condensation in the heating element. There is a time lag until the thermostat senses the temperature drop and opens the valve wider. Spence Temperature Regulators act like pilot operated pressure regulators when this occurs. They respond instantly to maintain the steam pressure until the thermostat has a chance to further increase it as needed for the heavier load.

These plus other design features explain why Spence Temperature Regulators function dependably and accurately year after year, without requiring extensive repairs or special attention.

Want more facts? Write for Bulletin T50 giving full details.

SE128

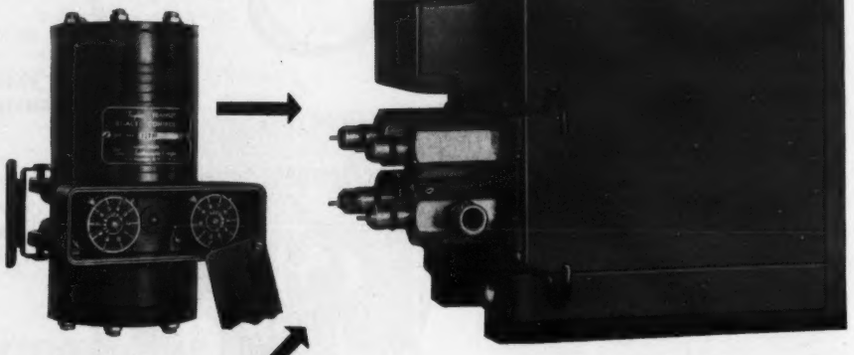
SPENCE ENGINEERING COMPANY, INC., Walden, New York

When inquiring check CP 2826 on handy form, pgs. 2-3

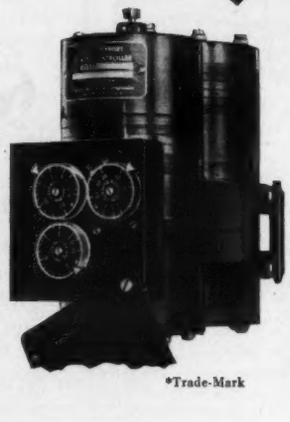
Plug-in feature fits all 3

The one-knob BI-ACT Controller is designed for use in industrial processes with short time lags, such as close-coupled liquid flow, fast pressure and comparable temperature problems. Combines simplicity of adjustment and economy.

One-knob BI-ACT*, two-knob BI-ACT and TRI-ACT* Controllers completely interchangeable on TRANSET* Indicators, Recorders and field-mounted manifolds, thanks to universal PLUG-IN feature.



The two-knob BI-ACT Controller will cover the full range of reset rate and proportional response adjustments. This makes it more satisfactory for those jobs that have longer time lags, and where close response adjustments are essential to good performance.



The brand new TRI-ACT Controller combines all three response adjustments (gain, reset rate and Pre-Act response). It is the most complete controller, giving the very best control on the more complex processes, particularly those with long time constants, and load changes requiring both derivative and reset adjustments. Gives faster recovery on load changes; start-up without overpeaking; the benefits of automatic reset without its evils.

*Trade-Mark

Plug-in, Taylor's new idea in panel instrumentation gives you simplicity of installation and maintenance; economy in installation and in panel space; and minimum down time for maintenance.

You can change from the simplest to the most complete control, or from indicator to recorder or vice versa, by simply unplugging one unit, plugging in another—in a matter of seconds. Only one simple rectangular panel opening is required for mounting both controller and receiver (recorder or indicator). Does not require welding or drilling of holes.

Only 3 piping connections required: air supply, controller output and variable transmitter. All other connections are made automatically, in the self-sealing manifold.

Panel space is not only reduced by plug-in feature, but adjustments and maintenance are even more convenient.

Write for full information on Taylor Plug-In TRANSET Control—it may well be the answer to your problem. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

Taylor Instruments mean ACCURACY FIRST

When inquiring check CP 2827 on handy form, pgs. 2-3

Records six variables at once, controls or provides alarm at same time . . .

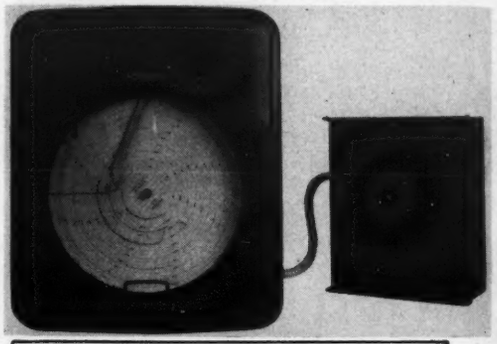
electrical instrument can be applied to usual problems of temp, flow, etc

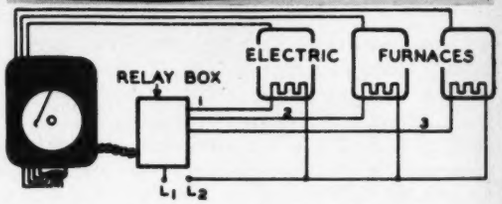
Uses: Instrument system records up to six variables and can provide warning signal common to all circuits monitored, or can actuate selective alarms for these variables.

Features: Only one recorder is used.

Description: Recorder provided with Rotax contacts will actuate common or select alarm, or will operate multiple on-off or three-position control relays. Instrument not only records maximum of six variables but can combine warning signal or control with each.

Common alarm is actuated when any record of the six-record instrument exceeds set point. Alarm relay is locked up until released through external





Six-point recorder and attachment are shown in photograph, typical application is shown in schematic

push button. Selective alarm consists of one to six latching relays actuated by corresponding number of measurements. Each of these relays may be released externally by push buttons also.

Selective alarms may be employed with temperature, flow, conductivity, or other sensing elements requiring only one or two lead switching.

Since six-record instrument has a 36 second time lapse between variables, control system works best if process changes are slow. If process changes too rapidly, manufacturer does not recommend six variable control.

(Multi-Record Recorder with Rotax mechanism has been developed by The Foxboro Co., Dept. CP, Foxboro, Mass. . . . or for more information check CP 2828 on convenient Reader Service slip between pages two and three.)

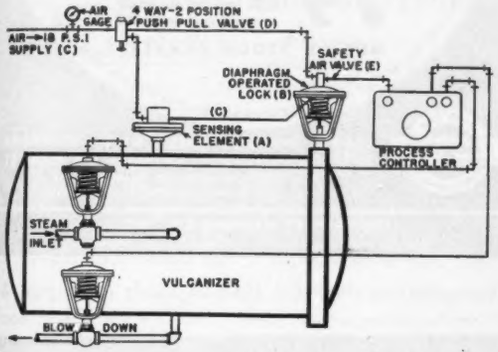
Interlocks doors to pressure, preventing careless acts with closed vessels . . .

suitable for autoclaves, etc, at pressures to 150 psi, control point is 10" water

Uses: Interlock for doors of pressure vessels makes it impossible to open (or close) vessel door unless pressure is at a safe value.

Features: Completely automatic, lock prevents admission of steam until door of vessel has been completely closed and locked; prevents door from being opened until pressure in the vessel has been reduced to 10 inches of water or less.

Description: Sensing element is mounted on shell of vessel — in this case a vulcanizer — receiving full pressure in the vessel. Element



Prevents pressurizing unless vessel door is closed and locked; prevents door from being opened until pressure has been reduced

operates dependably at pressure 10 inch water gage or less, but will withstand pressures to 150 psi. It controls operation of diaphragm-operated lock mounted on door ring. This locks door by means of a stop bolt. Position of bolt, in turn, controls operation of safety air valve mounted on top of diaphragm operated lock. This either permits or prevents air passage to instrument.

On hand controlled vessels, air line from safety air valve is connected directly to diaphragm valves on the steam inlet and blow-down lines. Power requirement is 18 psig compressed air.

(Safety Door Lock is a development of Weston Electrical Instrument Corp., Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. . . . or for more information check CP 2832 on handy form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

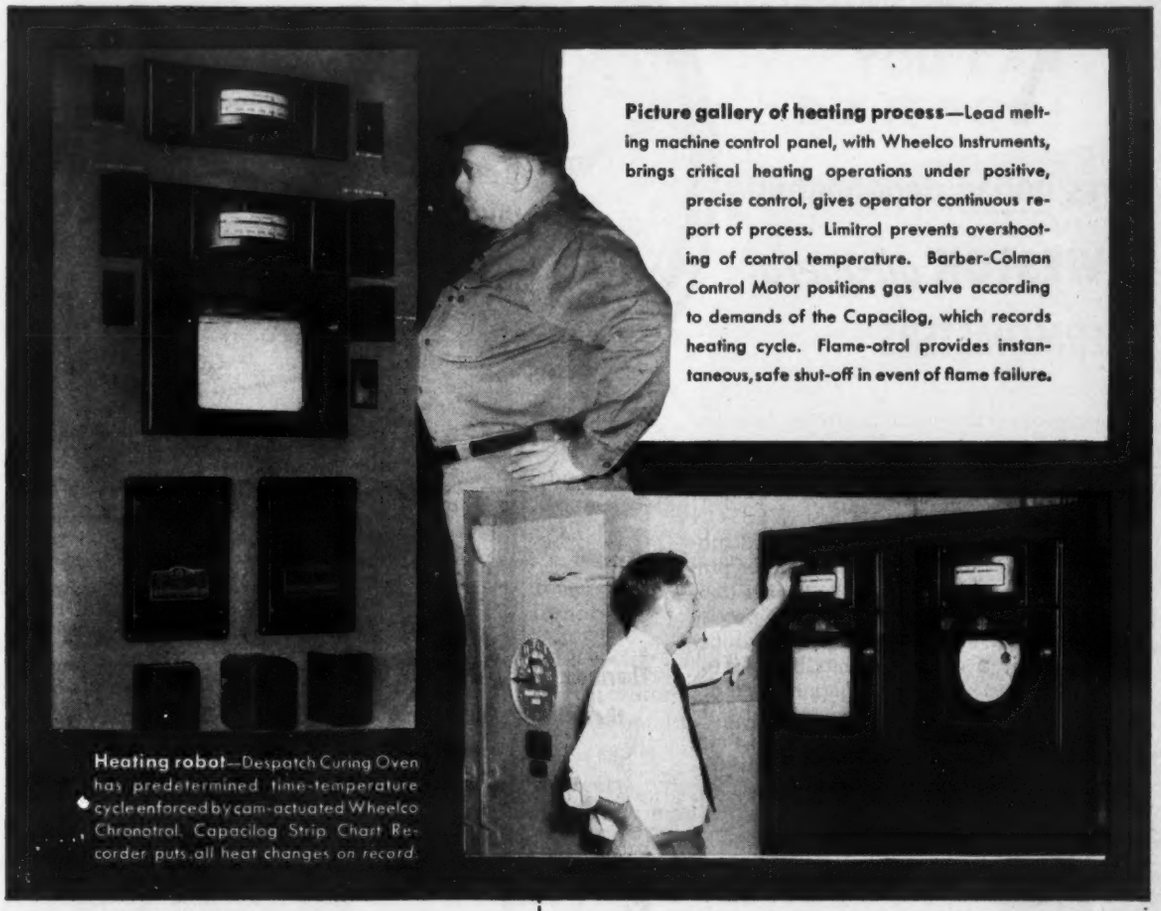
THE EDITORS

BARBER COLMAN

Wheelco Instruments

"mastermind" heating for curing and melting processes at REPUBLIC RUBBER DIV.

There are no heating blind spots in curing and melting operations at Republic Rubber Division of Lee Tire and Rubber Company. Wheelco Instruments automatically control each heating step precisely—help maintain constant, high quality production of small rubber parts and heavy insulated cable. Wheelco's Capacilog permanently records temperatures of the Despatch curing oven. Proper time-temperature cycle is enforced by a Wheelco Chronotrol, assuring product uniformity with economies in both time and labor. These are only a few of the ways Wheelco Instruments work for Republic Rubber—better see how they can work, *and save*, for you!



Picture gallery of heating process—Lead melting machine control panel, with Wheelco Instruments, brings critical heating operations under positive, precise control, gives operator continuous report of process. Limitrol prevents overshooting of control temperature. Barber-Colman Control Motor positions gas valve according to demands of the Capacilog, which records heating cycle. Flame-otrol provides instantaneous, safe shut-off in event of flame failure.

Heating robot—Despatch Curing Oven has predetermined time-temperature cycle enforced by cam-actuated Wheelco Chronotrol. Capacilog Strip Chart Recorder puts all heat changes on record.

Write for Bulletins C2-2 and F2-3

Factory-trained field engineers in all principal cities

BARBER-COLMAN COMPANY, ROCKFORD, ILLINOIS

Industrial Instruments • Automatic Controls • Air Distribution Products • Aircraft Controls • Small Motors • OVERdoors and Operators • Molded Products • Metal Cutting Tools • Machine Tools • Textile Machinery

WHEELCO INSTRUMENTS DIVISION
BARBER-COLMAN COMPANY, DEPT. H, 1520 ROCK ST., ROCKFORD, ILLINOIS

Gentlemen: I'm interested in Wheelco:

☐ Recorders ☐ Controllers ☐ Combustion Safeguards

Name_____

Firm Name_____

Address_____

City_____ State_____

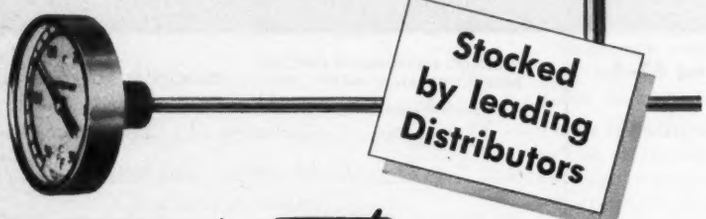
When inquiring check CP 2833 on handy form, pgs. 2-3

Cycle-Seasoning...

gives added dependability to WESTON *all-metal* THERMOMETERS

To INSURE accurate functioning over long periods, a bi-metal sensing element must necessarily be aged. But there's a big difference in the aging methods employed! Each element in a WESTON Thermometer is first WESTON made . . . then placed in a chamber and subjected to *broad range cycle seasoning* for prolonged periods. When finally placed in a thermometer it is *fit* and *ready* to give the precise measurements . . . the long-term dependability . . . so typical of all instruments bearing the WESTON name. WESTON Thermometers are available in all types, sizes, ranges and stem lengths for all industrial applications. Literature available . . . WESTON Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, New Jersey.

Thermometers with the MULTIPLE HELIX



Stocked by leading Distributors

WESTON *Thermometers*

When inquiring check CP 2834 on handy form, pgs. 2-3

Handles hundred watts on 0.2 μ amp signal at 1% accuracy . . .

and sensitivity, time-delay, etc, are adjustable in service

Uses: Controls moderate power loads from small signals.

Features: Relays will operate on as little as 0.2 microamperes or 0.5 millivolts.

Description: Non-indicating meter relay consists of a moving coil relay with self locking contacts. Sensitivity is comparable to vacuum tube devices. Accuracy is factory adjusted within 2% of specified current or voltage.

Approximate size of plastic relay case is that of a 2½" cube

Adjustment can be made at site of installation, however, to improve accuracy to better than 1%. Some reports indicate that accuracies as good as one quarter of 1% have been achieved.

Wide variety of actuating current or voltage signals can be attained — voltage ranges from 0.5 millivolts to 500 volts, and current from 0.2 microamperes to 50 amperes. Sensitivity is adjustable at point of installation.

Relays can be used on alternating current with addition of a rectifier of the crystal or instrument type copper oxide variety. Rectifiers can also be supplied internally.

Normal contact arrangements are SPST or SPDT and have ratings up to 100 milliamperes DC for make only. Heavy duty contacts are rated at one ampere or 115 volt AC or 32 volt DC for both "make" and "break".

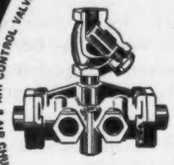
Design variations allow for a range of response time from one millisecond to ten seconds on most sensitivities encountered.

LOGAN AIR AND HYDRAULIC **POWER**

SPEEDS • COORDINATES • REFINES PRODUCTION IN OVER 10,000 INDUSTRIAL PLANTS

AIR CONTROL VALVES • AIR CYLINDERS • AIR-DRAULIC CYLINDERS • AIR and HYDRAULIC PRESSES • COLLET GRIP TUBE FITTINGS • AIR CHUCKS • HYDRAULIC CONTROL VALVES • HYDRAULIC CYLINDERS • HYDRAULIC POWER UNITS • SURE-FLOW COOLANT PUMPS

Logan
AIR CONTROL VALVES



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- COMPACT DESIGN
- EASILY INSTALLED
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79 MODELS
MOSTLY STOCK DELIVERY

SAVES TIME Logan AIR AND HYDRAULIC EQUIPMENT EFFORT-MOTION

LOGAN MANUFACTURES 8,975 STANDARD CATALOGED ITEMS • CATALOG ON REQUEST
Consult Logan for your Special Heavy Duty, Mill-Type Cylinder requirements.

LOGANSPORT MACHINE CO., INC.
835 Center Avenue Logansport, Indiana

When inquiring check CP 2835 on handy form, pgs. 2-3

TWICE the Power at the SAME COST!

GR G-R announces an entirely new VARIAC continuously-adjustable transformer with a power rating of 345 volt-amperes. This VARIAC is designed to replace the popular Type 200-B, and has TWICE the power rating of the 200-B. The price is the same: $12.50.

The Type V-2 is equipped with the new and exclusive DURATRAK brush-contact surface which provides improved performance, even longer life, and practically no maintenance.

For complete information write for the NEW Variac Bulletin!

NEW Type V-2 Variac
Price $12.50

GENERAL RADIO Company 275 Massachusetts Ave., Cambridge 39, Mass.
90 West St. NEW YORK 6 920 South Michigan Ave. CHICAGO 5
1000 North Seward St. LOS ANGELES 38

When inquiring check CP 2836 on handy form, pgs. 2-3

Water Heaters Controlled by Powers Accritem Regulators

What's Your Water Temperature Control Problem?

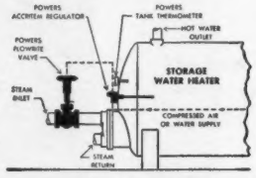
POWERS ... with their many types of thermostatic regulators and 60 years experience is well qualified to help you find the right type of control for these applications:

Forced Hot Water Heating Systems; various types of Water Heaters and Heat Exchangers; Jacket Water Cooling for Air Compressors, Diesel and Gas Engines also Cyclotrons, Chocolate Enrobers and Plastic forming Presses; all types of Shower Baths and Hospital Hydrotherapy; processing X-Ray, Regular and Colored Film — and hundreds of other uses.

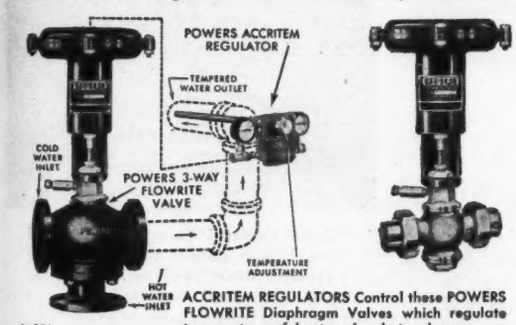
Only one of Powers varied line of water temperature controls is shown here... the *Accritem Regulator*. It's compressed air operated, has calibrated dial temperature adjustment, adjustable sensitivity and many other features described in *Condensed Catalog 3035*.

Compressed Air Operated

Only one of many applications Small Size. Bulb is 12" long



Powers Accritem Regulators Give Years Of Dependable Service



ACCRITEM REGULATORS Control these POWERS FLOWRITE Diaphragm Valves which regulate temperature of heaters in photo above.

(a92)

THE POWERS REGULATOR COMPANY
Skokie, Ill. • Offices in Over 50 Cities, see your phone book.
OVER 60 YEARS OF WATER TEMPERATURE CONTROL

When inquiring check CP 2837 on handy form, pgs. 2-3

Relay is housed in clear plastic case as shown. It is approximately the size of a 2½" cube including terminals. Relay is adaptable to several mountings including a hermetically sealed can with plug-in terminals.

(Non-indicating Meter Relay is a development of Assembly Products Inc., Dept. CP, P. O. Box 191 Chagrin Falls 59, Ohio . . . or for more information check CP 2839 on handy form, pages 2 and 3.)

Big and little charts printed on ordinary, special paper

Circular instrument charts up to 18 inches in diameter and strip charts up to 29⅝ inches wide are now being printed. These may be produced to specification for all types of special instruments, research instruments, computers, etc.

Specially developed printing equipment makes it possible to produce charts on papers such as wax coated, heat sensitive, chemically coated, smoke covered, and electrically sensitive. Manufacturer also has engineering service available for development of charts which are best suited to requirements of a specific application.

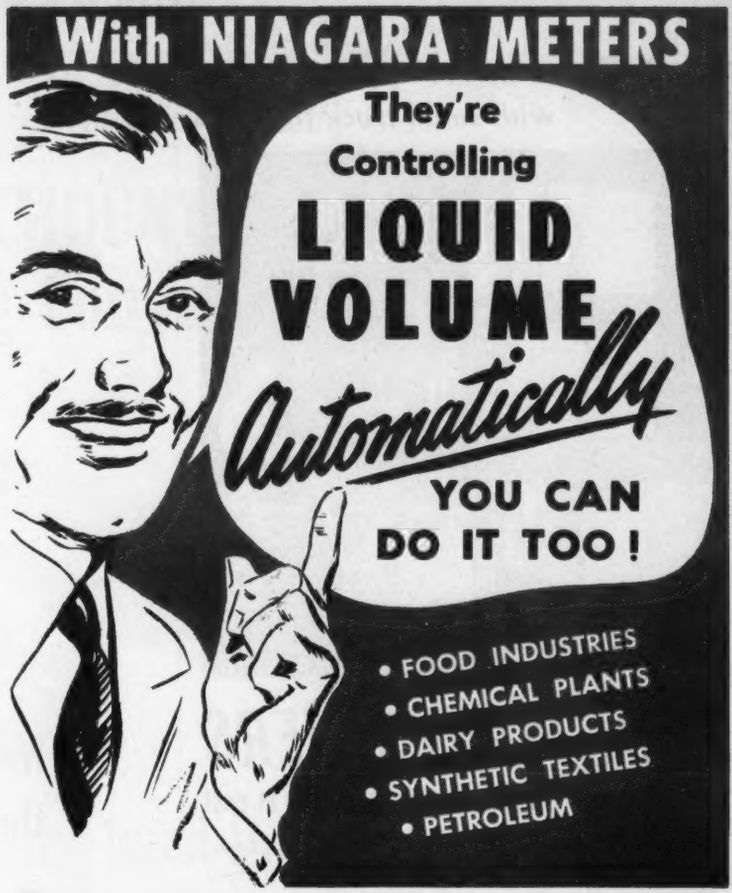
(This expansion of production facilities for printed recorder charts has been made by The Bristol Co., Dept. CP, Waterbury 20, Conn. . . . or for more infomation check CP 2840 on handy form, pages 2 and 3.)

Tells how puff of air positions rolls

Printed in two colors, four-page bulletin explains concisely how low pressure air can be used to sense edge position of a moving web. Complete control system is powerful enough to move heavy rolls to exact position required for precise spooling or winding.

Bulletin points out that instrument system does not employ electronics and has only two moving parts — thus is simple to maintain.

Bulletin 141 is issued by Askania Regulator Co., Dept. CP, 240 E. Ontario St., Chicago 11, Ill. When inquiring specify CP 2841, pages 2 and 3.



Imagine the time and guesswork you can save by measuring liquid volumes automatically. Just set the hand of the NIAGARA Electri-Contact METER at the volume desired and turn on the flow of liquid.

SET IT — FORGET IT

It will turn off automatically. NIAGARA METERS enable your men to handle more work.

Practically every type of industry is using and acclaiming the accuracy of NIAGARA METERS. They precisely measure liquid volumes from one to one thousand gallons a minute!

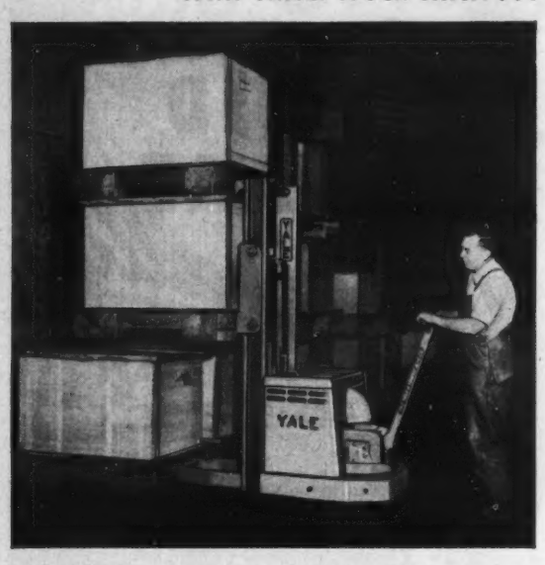
There's a NIAGARA METER for nearly every type of liquid including most chemicals. Investigate the advantages of NIAGARA METERS.

Write today for full details.

BUFFALO METER CO.
2892 MAIN STREET • BUFFALO, NEW YORK

When inquiring check CP 2842 on handy form, pgs. 2-3

Get big truck lift...
with small truck thrift...



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Smaller in size...lighter in weight...lower in cost

YALE WORKSAVER ELECTRIC TRUCKS are the perfect solution where plant and warehouse facilities...or limited budgets ...had previously ruled out mechanical handling operations. YALE WORKSAVERS lift, move and stack materials over low-load flooring...unreinforced ramps and elevators...freight cars and trucks...save time, space, manpower and money. Industries of all kinds choose YALE WORKSAVERS because they know the YALE name and reputation. They count on the versatility of WORKSAVERS...to do the job better, more economically. Contact your local YALE Representative or complete the coupon for a demonstration. Ask about the complete range of attachments that makes the WORKSAVER the most versatile tool in your plant.

YALE*

MATERIALS HANDLING EQUIPMENT

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Please have your local representative call for an appointment.

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Gas, Electric, Diesel Lift Trucks • *Worksavers* • Hand Trucks
Hand and Electric Hoists • Pul-Lifts

When inquiring check CP 2843 on handy form, pgs. 2-3

Twin drum-filling station is seen at lower right. Conveyor line passing across upper left of photo has gal-cartons on it; conveyor line at lower center has quart-cartons on it. Quart-filling machine can be seen through conveyor supports at lower left of photo

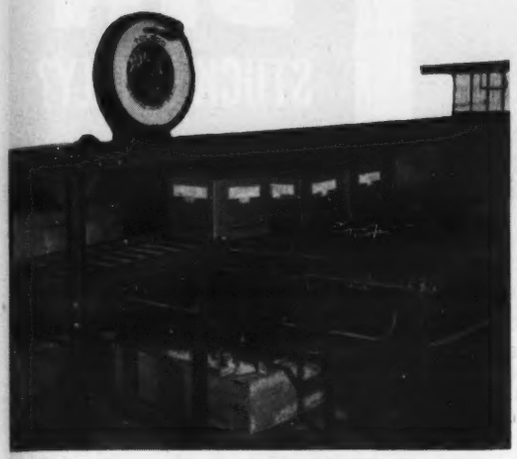
Move 650,000 lb of anti-freeze through packaging line — yet require only 4 hp

World's largest plant for this purpose makes maximum utilization of gravity roller conveyors to speed cans on their thirty-minute ride through process

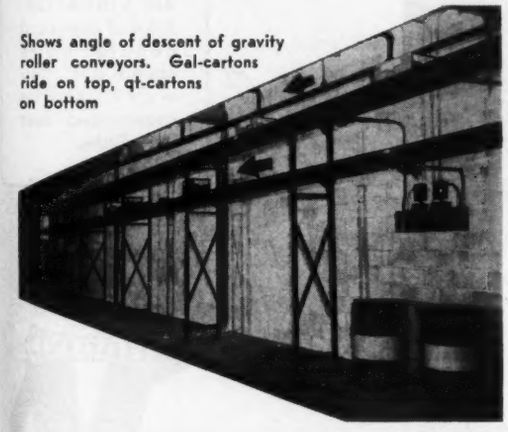
Swivel section in foreground can load any of four parallel sections of track (seen in background) with drums on way to filling station

SITUATED on the Mississippi River a few miles below St. Louis is the J. D. Streett & Company, Inc.'s plant for packaging anti-freeze products. Reportedly the largest unit of its kind in the world, its river-side location was expressly chosen to take advantage of convenient water transportation. Bulk materials come in by barge from Texas and other points.

The bulk liquids are unloaded into several holding tanks, each of approx. 1,000,000 gal capacity. From here the basic ingredients are piped into the plant where they are blended or batched into the anti-freeze formula. Final product then is shipped in bulk in tank cars or trucks — or is piped to filling machines for 55-gal drums, and 1-gal and 1-qt cans. Conveyor arrangement



Automatic case rejector on qt-carton line. Cartons within weight tolerance continue on main line; off-weight cartons are diverted onto spur



Shows angle of descent of gravity roller conveyors. Gal-cartons ride on top, qt-cartons on bottom

for the latter requires a minimum of power despite the sizable amount of material which is handled and the distance it is moved.

Secret to this achievement is the maximum utilization of gravity roller conveyors in the material flow set-up. On the qt-line, for example, there is *24 ft* of powered conveyor (2 hp motor) and *286 ft* of track using gravity flow. Highest point on the line is 8¾ ft and the lowest, 1½ ft. On the gal-can line, there is one powered section, with a 2 hp motor, totaling *38 ft*; unpowered section of line is *300 ft* in length. Highest point above floor level on this conveyor line is nearly 11¼ ft — lowest point, 2 1/3 ft. Powered sections in each case boost the material to where it can begin its free descent.

From the anti-freeze filling stations, the cans go to casing machines where 6 one-gal cans make up one carton, and 24 one-qt cans go into the other carton used. From here on, the conveyor flights are ar-

(*Continued on next page*)

"Easy to order!"

"Easy to install!"

FLEXMOUNT Oscillating Conveyor...

now available from stock...

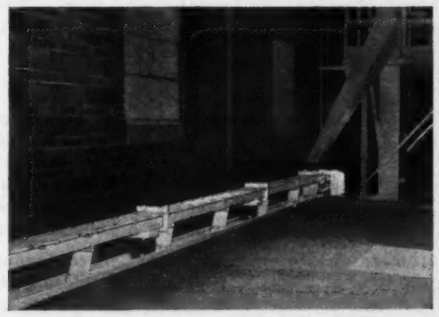
cuts costs on many hard-to-handle materials

YES, you can now buy FLEXMOUNT Oscillating Conveyors right "off the shelf." Stock sections in 8, 12 and 18 in. trough widths make up into any desired length. There's no waiting for special engineering.

The compact flexibility of Link-Belt's FLEXMOUNT makes it the low-cost answer for conveying many hard-to-handle materials in congested locations. Spillage and leakage are eliminated by the high-side, one-piece trough that can easily be made dust- or gas-tight if desired. And dividers can be installed to handle two or more materials simultaneously.

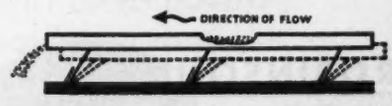
Remember, too, Link-Belt has test units and laboratory facilities available for your use. Our engineers will be glad to show you how FLEXMOUNT Oscillating Conveyors can serve your requirements. For greater capacities, Link-Belt offers heavy-duty designs.

See the versatile FLEXMOUNT at your nearby Link-Belt factory branch store or distributor. For complete installation and operating data, ask for Book 2478.



Compact, dependable 8-inch by 4-inch Flexmount Oscillating Conveyor with multiple discharge gates distributing material to storage bins below floor.

How Positive Action moves material



Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum.

LINK-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,197

When inquiring check CP 2844 on handy form, pgs. 2-3

Robinson Air-Activated Conveyor

The ***Low-volume*** *Air Conveyor*

▶ Heart of the Robinson Air-Activated Conveyor System . . . the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.

Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON Air-Activated **CONVEYOR SYSTEMS**

A Division of Morse Boulger Destructor Co.

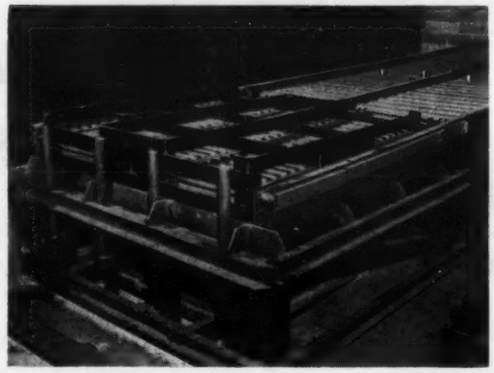
211-V EAST 42nd ST. • NEW YORK 17, N. Y.

Representatives in Principal Cities

When inquiring check CP 2845 on handy form, pgs. 2-3

(Continued from preceding page)

Over-all view of end of conveyor lines. Both case rejectors—one for gal cartons and one for qt cartons —can be seen. Cartons are palletized and taken to storage or to shipment



End of drum line shows special steel pallet on device which positions drums for unloading by lift truck — with pallet or without

ranged one above the other: — the gal-carton line above the qt-carton line (see photo). Time of travel through the packaging circuit is an estimated thirty minutes.

This period includes: unloading the empty can from boxcar; filling, closing and cartoning; and loading into boxcar for shipment. In an eight-hour period total material flow approximates 650,000 pounds on these two lines; total power requirements is four horsepower.

An integral part of the qt and gal conveyor lines is the Alvey Case Rejector (see photo). It check weighs the cartons as they pass over a set of scales — one for each line. Cartons within weight tolerance are signaled correct and continue on the conveyor lines. Off-weight packages are rejected and diverted from the conveyor lines. Tolerance of scales is ± 4 oz.

The 55-gal drum line, which is not in continuous operation, also incorporates considerable footage of gravity roller conveyors: — 145 ft of single track, 20 ft of switching track and 120 ft of 4-track line or a total of 285 ft. There are three sections of belt conveyor, each with 2 hp motors and totaling 144

BIN STUCK LATELY?

If you're troubled with sticking, arching, bridging or settling conditions in handling your dry chemical materials, solve it the simple way with a CLEVELAND *AIR* VIBRATOR. A lot of chemical people have found out they work like a charm and cost very little.

Standard metallic impact and air-cushioned, quiet types are available in a wide range of sizes.

CATALOG NO. 105 ON REQUEST

THE CLEVELAND VIBRATOR COMPANY

2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 2846 on handy form, pgs. 2-3

ft in length. Highest point of conveyor is 8'9½" — lowest point is 1'.

An interesting feature of this conveyor set-up is the unit termed an "alligator switch section". It has one switching track (see photo) which feeds the four parallel roller conveyor sections. Any overflow of empty drums at this point in the system can thus be dispersed over the four lines. Latter converge to two tracks at a twin drum-filling station. Scales here are set to a tolerance of ± 2 oz. Filling rate of drums is 2 per min.

At the end of the drum line is a special device (see photo) for handling the filled containers. By means of it, four drums can be (a) automatically positioned on a special four-drum pallet for removal by lift truck or (b) positioned for removal by lift truck — unpalletized.

(Contributing information to this article was the J. D. Streett & Co., Inc., Anti-freeze Division, P.O. Box 33, Lemay 23, Mo. Conveyor equipment was manufactured by Alvey Conveyor Manufacturing Co., Dept. CP, 9301 Olive Street Road, St. Louis 24, Mo. . . . or for more information check CP 2847 on handy form, pages 2 and 3.)

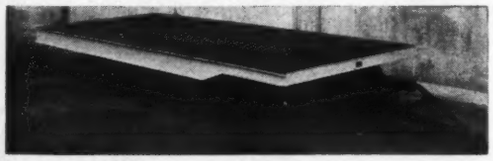
Flat bed of trailer eases handling of heavy materials, equipment . . .

all-welded unit has 60,000 lb capacity, can be coupled to form train system

Uses: Handling heavy materials and equipment in cargo warehouses and shipping docks.

Features: All-welded trailer supports 60,000 lb, has flat bed construction for easy loading, unloading.

Description: All-steel trailer (Model A-443) is 17′ long, 7′ wide, weighs 5700 lb, and has roller-bearing wheels with solid pressed-on rubber tires.



Carries 60,000 lb of cargo

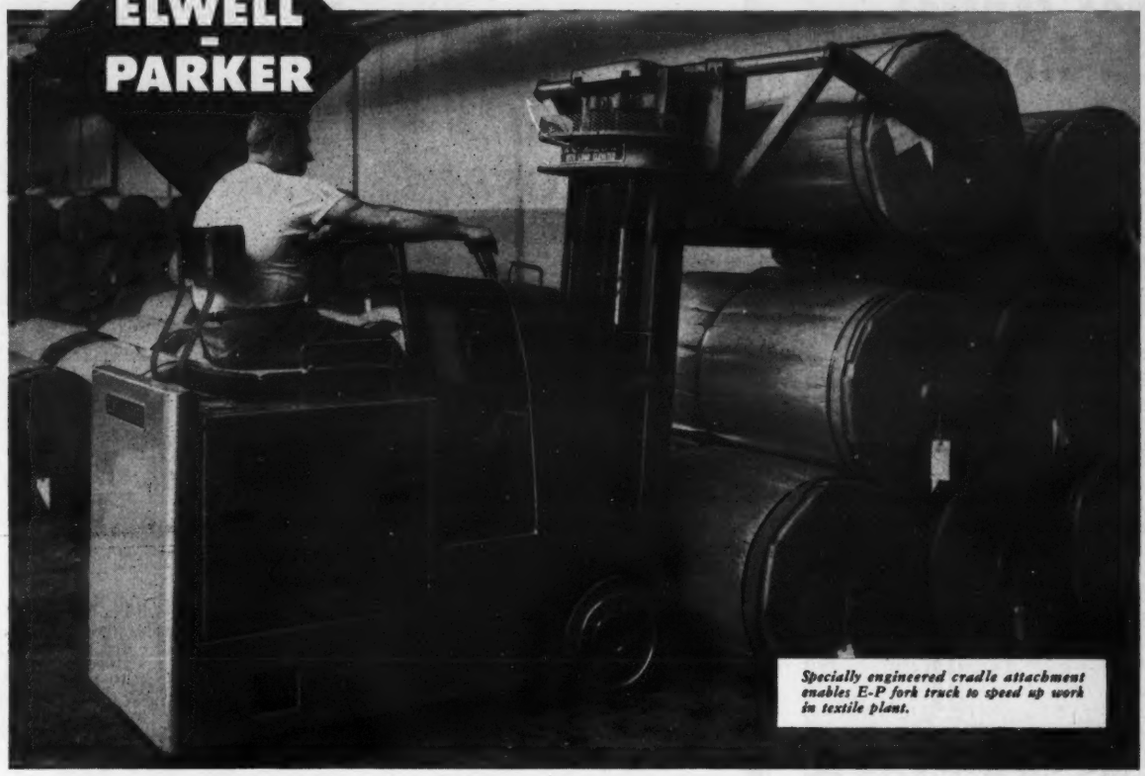
Nine longitudinal and six cross-beams welded to front rear, and side channels support a ¼" steel deck. Channel beams, 8" wide, and longitudinal and cross-beams 4" wide are used in assembly.

A loop handle at the front and hitch at the rear allows the trailer to be used as a single freight carrying unit, or permits several to be coupled to form trackless train systems.

(Development of the Mercury Mfg. Co., Dept. CP, 4044 S. Halsted St., Chicago, Ill. . . . or for more information check CP 2848 on handy form, pages 2 and 3.)

ELWELL-PARKER

Customer Satisfaction is many things . . .



Specially engineered cradle attachment enables E-P fork truck to speed up work in textile plant.

for example:

DELIVERIES AS PROMISED—Buyers of Elwell-Parkers save valuable time because trucks arrive on schedule.

UNEXCELLED SPARE PARTS SERVICE—For years Elwell-Parker has promptly furnished 85% to 90% of all required replacements out of stock.

FREE INSPECTION SERVICE—Owners of Elwell-Parkers are usually visited at least twice a year by E-P Service Engineers. They advise on preventative maintenance and proper operation . . . are available for consultation on emergency problems.

SPECIAL ENGINEERING—E-P experience in designing "special" trucks or attachments for unusual load conditions is *unmatched.*

SUPERIOR QUALITY—is the *main reason* why Elwell-Parker customers are so satisfied. E-P trucks commonly give 15 to 20 years reliable service. "*They are built to match the finest machinery in your plant.*"

GET THE FACTS—Write for this complete catalog. The Elwell-Parker Electric Co., 4017 St. Clair Ave., Cleveland 3, Ohio.

ELWELL-PARKERS ARE BUILT UP TO QUALITY NOT DOWN TO PRICE!

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

When inquiring check CP 2849 on handy form, pgs. 2-3

want to move or control materials . . .

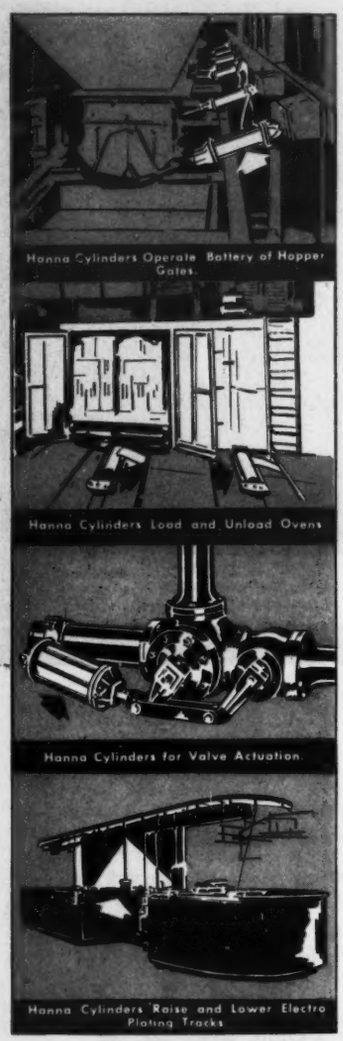
with SPEED, EASE and LOW COST?

USE

HANNA

fluid power

cylinders


Hanna Cylinders Operate Battery of Hopper Gates.
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Hanna Cylinder Power offers a low-cost solution to the problem of volume material handling. Hydraulic and pneumatic cylinders can be used in hundreds of ways to push, pull, lift, lower, tilt, press, clamp or control. Practically any force or movement requirements can be supplied. Hanna Engineers are always willing to help you solve your toughest material handling problems. You'll find the name of your Hanna Representative in your local classified telephone directory. Call him today or write:

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HYDRAULIC AND PNEUMATIC EQUIPMENT • CYLINDERS • VALVES • RIVETERS

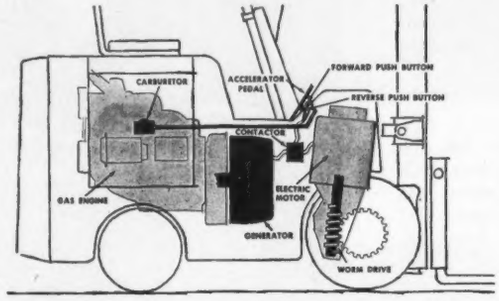
When inquiring check CP 2850 on handy form, pgs. 2-3

No clutch or gear shifting worries for operator when gas lift truck has electric transmission . . .

engine rpm determines generator rate; forward, reverse are controlled by foot buttons

Uses: For handling of materials requiring use of a 4000-lb capacity fork lift truck.

Features: Operator's hands are left free for steering, lifting, and tilting, since transmission system requires no clutch or gear shift. Elimination of the clutch and gear shift cuts out two traditional high-replacement components of most gas-driven vehicles. Also eliminated are the controller and resistors which have always been major maintenance elements in battery-powered trucks.



Travel speed controlled entirely by foot

Description: Called the Gas-O-Matic, the new truck uses a gasoline engine, a specially-designed variable voltage regulator generator and an electric motor as its power system.

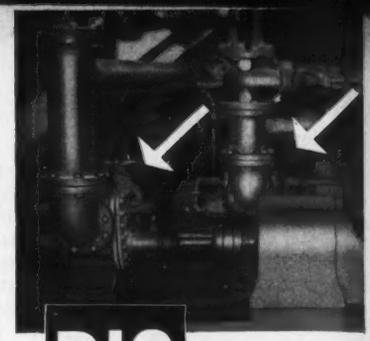
Key element is the variable voltage generator, which is an integral assembly with the engine connected to the drive shaft. As engine rpm increases, voltage output of the generator builds up, following a smooth, unbroken curve pattern.

Travel speed of the unit is controlled entirely by foot pressure on the accelerator — no gears to shift. Travel direction is controlled by "forward" and "reverse" foot buttons. On pilot model, manufacturer reports gas consumption during a 45-day period was 30 per cent less than any other gas-powered fork truck available.

Other features of the Gas-O-Matic are: 1) smooth acceleration with "perfect" inching control, 2) easy accessibility for maintenance, 3) elimination of dangers of carbon monoxide poisoning, 4) elimination of back-firing, 5) positive braking and quick-response to speed control, 6) automotive steering, and worm-driven trailing axle. Driver's seat is offset, slightly left of center, and there is no cowl, thus giving full visibility in front of the truck.

Specifications of the unit, available in a 4000-lb capacity model, are:

Overall length	123"
Overall width	39"
Turning radius	78"
Standard lift	83/130"
Minimum intersecting aisle	69"



BIG SUGAR MILL

. . . uses KINNEY pumps

Kinney Model SD Rotating Plunger Pumps handle 1st and 2nd molasses at giant Dominican sugar mill CENTRAL RIO HAINA—perhaps the largest mill in the Americas. Here's what they gain by using Kinney SD Pumps:

1. **Positive displacement pumping of meter-like dependability.**
2. **Low-maintenance operation insured by conservative rating of shafts, bearings, and other moving parts.**
3. **Efficient handling of viscous materials due to unique rotating plunger design.**
4. **The right pump for the job — insured by Kinney's wide range of models and sizes.**

Kinney Manufacturing Co.—manufacturers of liquid and vacuum pumps. Representatives throughout the United States and in foreign countries.

GET —FULL— DETAILS

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Please send Bulletin L-51 describing the complete line of Kinney Liquid Pumps.

NAME .....
COMPANY .....
STREET .....
CITY ..... STATE .....

When inquiring check CP 2851 on handy form, pgs. 2-3

Overall heights	83"
Maximum travel speed	8 mph
Weight	7500 lb

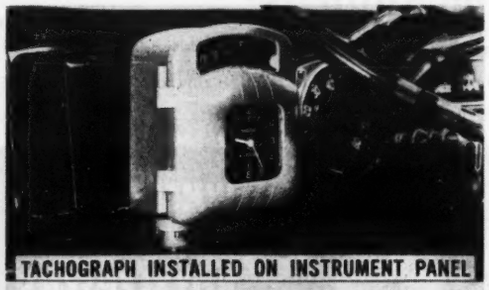
(Development of Industrial Truck Div., Baker-Raulang Company, Dept. CP, 1230 West 80th St., Cleveland 2, Ohio . . . or for more information check CP 2852 on handy form, pages 2 & 3.)

Total miles, speed, running time recorded on tachometer chart

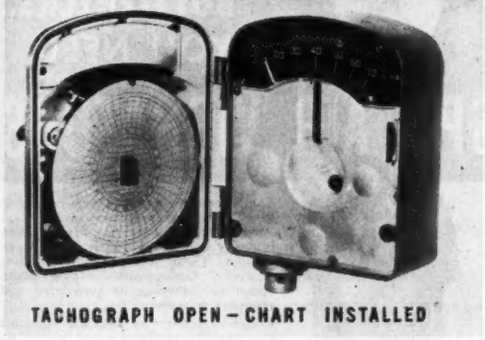
permanent, complete record used for close, check on truck efficiency, driver practices

Uses: For analyzing vehicle operation and movement, graphically recording on a chart miles traveled, speed traveled, idling and time vehicle has been in operation.

Features: Charted information is of practical value in reducing maintenance costs and encouraging safe and economical driving practices. Recent redesign changes include new case of attractive cast aluminum in metallic gray finish with clock face, speedometer, and odometer lighted for better vision. Warning light is easily set to conform to any speed limit.



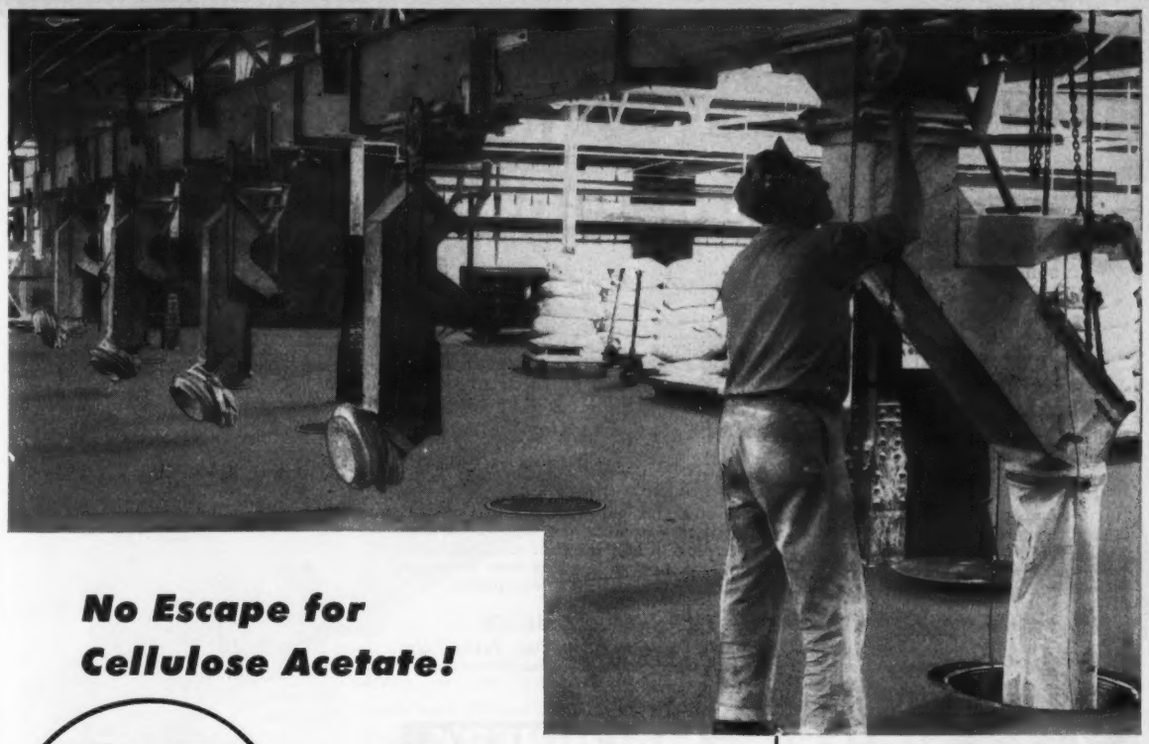
TACHOGRAPH INSTALLED ON INSTRUMENT PANEL



TACHOGRAPH OPEN—CHART INSTALLED

Description: Model AA tachograph installs easily on truck dashboard to be constantly in full view of driver. Lower photo shows how case swings open for convenient insertion of tachograph chart on rectangular stud. The million mile odometer records total mileage of the vehicle.

(Model AA tachometer is built by Wagner Electric Corp., Department CP, 6400 Plymouth Ave., St. Louis 14, Mo. . . . or for more information check CP 2853 on convenient Reader Service slip between pages two and three.)



No Escape for Cellulose Acetate!

S-A CONVEYING *System* provides

SELECTIVE FEEDING

to mixers, with no dust or impurities

At this plant an S-A System of REDLER conveyors and elevators keeps cellulose acetate moving at rates up to 20 tons per hour. Dust-tight, uncontaminated delivery of the cellulose acetate, as needed to any of numerous mixers, was specified.

Difficult or unusual handling problems are nothing new to S-A engineers. They've been solving them for more than half a century, with the help of the complete S-A line of bulk handling units—*all types for all purposes!* Add the two—S-A experience *plus* S-A equipment—and you'll get a money saving answer to practically *any* bulk materials handling problem . . . Write and we'll arrange a free survey, without obligation.

CELANESE CORP. OF AMERICA
Amcelle Plant
Cumberland, Maryland

From huge steel storage tanks, cellulose acetate moves through totally enclosed REDLER conveyors and elevators to a weight hopper. From here a series of horizontal 13" REDLERS up to 140 feet long, with as many as nine discharge points, feed the various mixers. Slide gates control discharge to mixers through pivoting chutes.

REDLER Conveyor-Elevators
ZIPPER Conveyor-Elevators
Vibrating Conveyors
Belt Conveyors
Screw Conveyors
Bucket Elevators
Pan Conveyors and Feeders
Circular Bin Dischargers
CentrifugalLoaders and Pilers
TELLEVEL Bin Level Controls
Ship Loaders and Unloaders
Storage and Reclaiming Systems
Box Car Loaders and Unloaders
Bin Gates, All Types
SEALMASTER Ball Bearing Units

Write for Bulletins on any of the above.

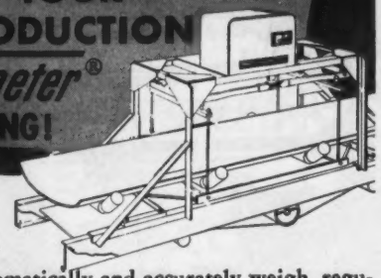
STEPHEN S-A DAMSON MFG. CO.

11 Ridgeway Avenue, Aurora, Illinois — Los Angeles, Calif., Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 2854 on handy form, pgs. 2-3

Control YOUR CONVEYOR PRODUCTION with Transportometer® CONTINUOUS WEIGHING!



No more estimating tonnage figures or rehandling material for weighing. Installed on your present belt conveyor system, TRANSPORTOMETER can automatically and accurately weigh, regulate, totalize and record the flow of raw, intermediate or finished products. Whether it is storing, handling or processing, you get a more complete and precise control of your operations with resultant savings in material, time and labor.

Here's why TRANSPORTOMETER is the finest unit of its type made:

Completely mechanical gear differential integrator, automatically and continuously records on direct reading tonnage totalizer; automatic—no supervision after calibration; accurate—99½% or better, regardless of belt speed or tonnage; easily installed—unit supplied ready for mounting on new or existing belt conveyor; negligible wear and lowest maintenance cost of any comparable equipment.

Some of the Materials Weighed by the TRANSPORTOMETER:

Limestone; Coal; Coke; Metallic Ores; Sand; Stone; Cement; Clay; Paper Pulp; Super Phosphate; Chemicals; Coffee Beans; Pharmaceuticals;

TRANSPORTOMETER DIVISION
SINTERING MACHINERY CORPORATION
150 Sinter Avenue, Netcong, N.J.

When inquiring check CP 2855 on handy form, pgs. 2-3

HARRISBURG CYLINDERS
FOR HIGH-PRESSURE GASES

IF YOU DON'T KNOW
CYLINDERS
KNOW WHO MAKES THEM

If your company stores, transports, or uses fixed, liquid, or medical gases . . . you use high-pressure gas cylinders. But what *brand* does your company buy? That's important, you know, because today *safety* and *quality* in cylinders are commanding new respect. Get acquainted with *Harrisburg Steel's* cylinder line . . . a complete range of sizes and capacities from 14 to 400 cubic feet, in domestic and export types. *Write for 24-page Catalog and prices.*

100 Years in Pennsylvania's Capital
Harrisburg Steel CORPORATION HARRISBURG 24 PENNSYLVANIA

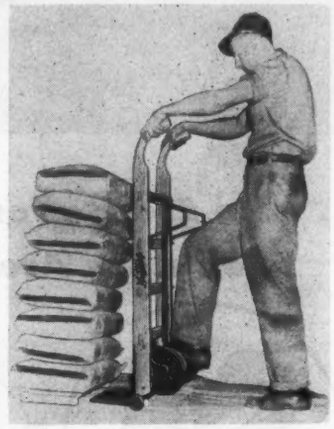
When inquiring check CP 2856 on handy form, pgs. 2-3

MATERIAL HANDLING

Empty or loaded, bag truck stands upright, won't tip accidentally

Uses: For handling of bagged products on low height pallets.

Features: Unit stands alone, empty or loaded. No hazardous tipping of load is necessary to insert or withdraw nose of truck when loading or unloading. Auxiliary forward wheels permit rolling of nose completely beneath pallet and positioning of frame snugly against load. Two sets of wheels provide a 2-stage fulcrum for easier "breaking-back" of load into wheeling position.



Stands alone, empty or loaded

Description: Made in two standard sizes, bag truck handles unit loads of 8 to 10 bags at a time. Chief difference is that the model 1027-1 has 54" handle length; the 1027-2 has a 60" handle length. Both models have 800 lb capacity, nose width of 20", and nose length of 10 inches. Steel legs prevent handle breakage if truck is dropped. Plate steel nose extends 9½" up frame for extra reinforcement. Roller-bearing main wheels (8 x 1⅞") have long-wearing demountable rubber tires. Both the main and the auxiliary wheels (2½ x 1¼") are mounted on full crosswise cold rolled steel axles with reinforcing sleeves. Model 1027-1 weighs approx 95 lb; model 1027-2 weighs approx 100 lb.

(Development of Nutting Truck & Caster Co., Dept. CP, Faribault, Minn. . . . or for more information check CP 2857 on handy form, pages 2 and 3.)

MERCURY
A-310 TRAILER

Corrugated box body

Steel dump body

Standardized for economy
Flexible for every need

Basic design, materials, fabrication of the A-310 Trailer have been standardized through years of rigorous testing under severe industrial service. Sizes, deck specifications, body types and superstructure are flexible to the requirements of each individual user. Wheel type and coupling system are optional. The result is the Mercury A-310 Trailer . . . standard of industry for efficient, low-cost, load carrying service. For complete details write for Bulletins 160 and A999.

MERCURY
FORK TRUCKS · TRACTORS · TRAILERS

MERCURY MANUFACTURING COMPANY
4020 South Halsted St., Chicago, Ill.

When inquiring check CP 2858 on handy form, pgs. 2-3

WHEN BINS BECOME BOTTLENECKS... YOU NEED
SPO AIR VIBRATORS

Don't let arching, bridging and clogging bottleneck your production . . . keep materials flowing from bins, hoppers and chutes with SPO air vibrators. These low-cost units deliver powerful hammer-like blows which eliminate jamming of powdered and granular materials.

Exclusive feature of SPO air vibrators is a special corrosion-proof bronze alloy cylinder liner which assures full-power start, high-speed operation, low air consumption and maximum service life. 1232-51

Write today for Bulletin 50.

SPO INCORPORATED
6531 GRAND DIVISION AVE. • CLEVELAND 25, OHIO

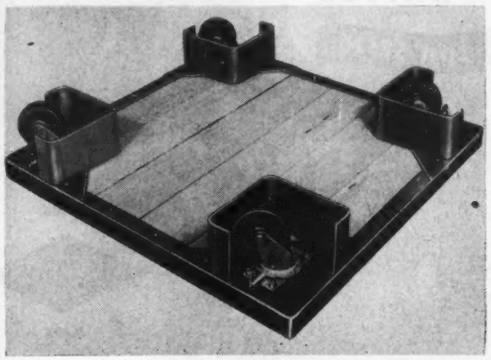
When inquiring check CP 2859 on handy form, pgs. 2-3

Guards give casters protection when dolly is lifted by fork truck . . .

aluminum-magnesium construction makes unit lightweight, easy to move and carry

A heavy duty dolly, fitted with guards to protect casters against damage when lifted by fork trucks, is being offered by manufacturer.

Swivel type casters are fitted wih plungers that can be engaged to lock casters at a fixed position. Aluminum-magnesium construction is used to provide a



Casters are protected

light-weight, easy to carry unit. Platform has magnesium, aluminum or hardwood surface for strength and rigidity. Various models and styles are available.

(Development of the Crescent Metal Products, Inc., Dept. CP, 18901 St. Clair Ave., Cleveland 10, Ohio . . . or for more information check CP 2860 on handy form, pages 2 and 3.)

4-way adjustment of dockboard assures a safe bridge from dock to truck

Uses: As a bridge between docks and trucks or other carriers.

Features: Four-way adjustment allows dockboard to be moved left or right, up or down for a positive, safe bridge. No maintenance is required.

Description: By use of a simple geared arrangement, dockboard can be shifted 10″ sideways. Variable position of compensating weight makes dockboard rest solidly on truck bed at all times. Positive lock holds unit securely in up position, thus preventing damage to dock, truck or load. Installation requires only a recessed pit, no pipes or cables. Dock can be installed by two men in less than 1 hr, manufacturer reports.

Herco dockboards are made in 20,000 and 30,000 lb capacities, lengths are 48 and 60″, width is 72″.

(Development of the Karl A. Herman Co., Dept. CP, 412 Fuller Ave., N.E. Grand Rapids, Mich. . . . or for more information check CP 2861 on handy form, pages 2 and 3.)

This 105-Ft. Conveyor Does Tremendous Job on One Horsepower!

This rugged, 105-Ft. Carrier Compact Conveyor handles an abrasive bulk chemical — conveys it quickly and efficiently, on 1 H.P. The unit's integral, self-cleaning pan is only 8" wide and 3" deep — its over-all height is less than 13"!

Carrier Compact Conveyors can be equipped with dust covers, dividers, intermediate discharge sections, screen decks, etc., to meet your processing requirements. They are now successfully handling a variety of bulk chemicals and foods . . . metal chips and castings . . . small turnings . . . and other hot, wet, abrasive, sticky or hard-to-handle products.

STANDARD POPULAR SIZES AVAILABLE FROM STOCK!

Carrier Compact Conveyors are the smallest units in the *complete* Carrier line of Natural-Frequency Conveyors (the largest of which have capacities up to 200 tons per hour). These spectacular conveyors work on a unique vibrating principle which substitutes the natural resonant action of springs, for brute force. Though up to 90% of the power output of a "brute-force" conveyor may be required to operate its moving parts — and only about 10% to convey its load — Carrier Natural-Frequency Conveyors require virtually no more power to operate, empty, than to run the motor alone! The result — *smaller motors, far less wear-and-tear, and an absolute minimum of maintenance and down-time!*

Get all the facts on Carrier Natural-Frequency Conveyors, including vibration-free units and vibrating spiral elevators. Mail the coupon, *today!*

"COMPACT" FEATURES

LESS POWER REQUIRED
(750-foot-tons per hour per H.P.)

LESS MAINTENANCE AND DOWN-TIME
(Less power + good design = good service)

NO DAMPENING UNDER LOAD
(Designed with extra power for specified load, with positive stroke)

MINIMUM SPACE REQUIREMENTS
(Over-all height of less than 13")

SCREENS, DEWATERS, SEPARATES, BLENDS, DRIES, COOLS
(Combines processing with conveying)

PROCESSING FEATURES AVAILABLE
(Dust covers, dividers, intermediate discharge sections, screen decks, etc.)

SELF-CLEANING
(Continuous smooth trough — no pockets)

WIDTHS FROM 6" TO 24"—LENGTHS FROM 5' TO 200'
(With integral pans of steel or other alloy metals, 12 gauge to ¼" plate, open or enclosed)

CARRIER
NATURAL-FREQUENCY
CONVEYORS

Carrier Conveyor Corporation—Dept. 16
Frankfort Avenue at Clifton, Louisville 6, Kentucky
Gentlemen:
Without obligation, please send me complete information on Carrier Natural-Frequency Conveyors.
Firm_____
Street_____
City_____ State_____
Att. Mr._____ Dept._____

When inquiring check CP 2862 on handy form, pgs. 2-3

FERTL-SOIL Reports:

"WE SAVED $5200 LAST YEAR BY ELIMINATING TRAMP IRON"

Eriez Magnetic Pulley Removes Up to 25 lbs. of Tramp Iron from Each Ton of Fertilizer

"An Eriez Magnetic Pulley, installed on a conveyor belt ahead of our milling and grinding equipment last year saved our company over $5200," reports James Smith, of the Fertl-Soil Company, Rahway, N. J. "By removing 25 pounds of nails, small bolts, nuts and other tramp iron (see insert), from each ton of fertilizer being processed, the Pulley saved over $1000 in preventing machinery damage, and saved $4200 in downtime! Customer goodwill has also been greatly strengthened because we know that our fertilizer is delivered free of *all* tramp iron. Our company used mechanical separating devices in the past, but the Eriez Pulley has proved to be the most positive and satisfactory means of eliminating ferrous contamination from our products."

Eriez Magnetic Pulley attracts, holds and automatically removes tramp iron from belt-conveyed material. Non-magnetic material falls free by gravity at its natural tangent point. Iron and steel, however, are held firm until carried out of the pulley's magnetic field beyond a divider where they fall off the belt into a container.

Only the ERIEZ Line of Patented Pulleys has ALL These Features:

1. New Indiana Hyflux Alnico V gives Eriez pulleys more pulling power than ever before.
2. Stressed skin construction assures greater durability in service.
3. No heavy internal spokes, cast iron, etc., to increase weight and bleed away strength.
4. End caps and internal supporting structure are non-magnetic . . . ferrous particles can't collect to cause bearing wear.
5. 68 standard sizes with capacities from 250 to 18,600 cu. ft. per hour are available for quick delivery.

Write for FREE 16-page Catalog 15 which describes 25 different Magnetic Separators for the chemical industry.

ERIEZ **MANUFACTURING COMPANY**

13 Magnet Drive • Erie, Pennsylvania

"Buy Permanent Protection . . . by ERIEZ"

When inquiring check CP 2863 on handy form, pgs. 2-3

MATERIAL HANDLING

35-ton industrial switcher designed for safety, full visibility . . .

1½′ extra width gives operator added vision

A 35-ton twin-axle diesel-electric locomotive has been added to manufacturer's line of industrial switchers.

The new unit is 9½′ wide, an increase of 1½′ over the 25 tonner, making it possible for operator to see around larger railroad cars. It is built 1½′ lower than the 45 tonner, facilitating operation through low doorways in plant buildings and is equipped with recessed steps providing easier access to the deck and affording greater safety to the brakemen.

Maximum speed is 20 mph, controlled by throttle lever, which regulates the diesel-engine output and is also interlocked with the electrical control.

Starting tractive effort is 21,000 lb at 30 per cent adhesion. On the level, it will pull 66 per cent more weight, manufacturer reports.

Locomotive has one Cummins Model NHBIS-600 diesel engine nominally rated 275 hp at 2100 rpm. It is directly connected to a DC, shunt-wound generator equipped with a winding to permit it to be used for starting the engine by storage battery power.

(Development of the General Electric Company, Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 2864 on handy form, pages 2 and 3.)

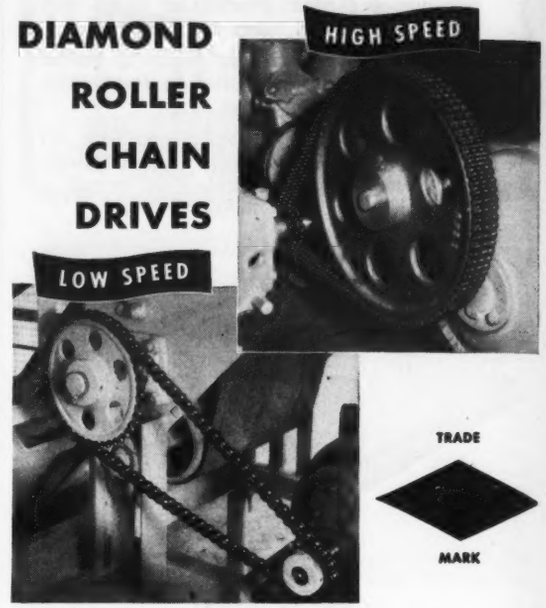
Gives specs on conveyors and accessories

Description and exact specifications of manufacturer's equipment are given in illustrated two-color catalogue on gravity wheel conveyors, gravity roller conveyors, gravity wheel and roller accessories, and power belt conveyors. Powerbelt conveyors include floor-to-floor and assembly types. The firm's engineering service is also described.

1953 cat is issued by Speedways Conveyors, Inc., Dept. CP, 1221 Niagara St., Buffalo 13, N. Y. When inquiring specify CP 2865 on handy form, pages 2 and 3.

the same *HIGH* efficiency at *ALL* speeds with

DIAMOND ROLLER CHAIN DRIVES



TRADE MARK

- **98-99% Efficiency Maintained.**
- **No Slip or Creep — Diamond Roller Chains are as positive as gears.**
- **Load Shared by many Sprocket Teeth.**
- **Stress on Bearings Reduced — and no separating forces as with gears.**

Experienced machinery design engineers and production men realize the importance of high maintained efficiency of power transfer with the result that Diamond Roller Chains are in greater use today than ever before. Precision manufacture of every part, — side plates, rollers and bushings assure uniform high quality, long-life smooth performance. Catalog 709 gives useful data and information; copy mailed on request.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

Dept. 411, 402 Kentucky Ave., Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND ROLLER CHAINS

When inquiring check CP 2866 on handy form, pgs. 2-3

Power for lift truck comes from gas, is transmitted electrically for smooth operation . . .

transmission gears, converters, overdrive mechanisms are all eliminated

Uses: For general industrial uses requiring a lift truck with 4000-6000 lb capacity.

Features: Although unit is powered by gasoline, (converters for propane, butane gas, etc. will be available) electric transmission has no mechanical connections from engine to drive unit. Transmission gears, need for hydraulic torque converters or overdrive mechanisms are eliminated. Since there is no mechanical connection between engine and wheels, transmission shock loads to engine are entirely eliminated.

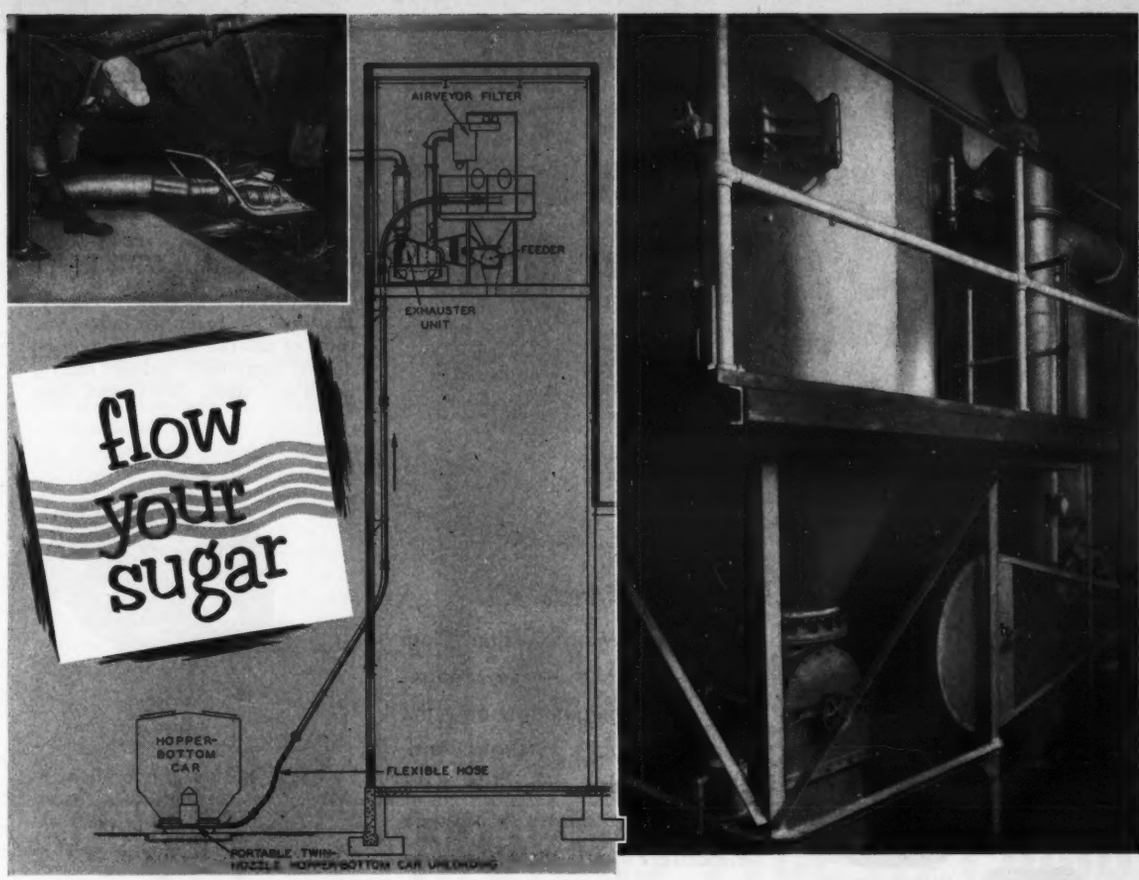
Gasoline engine is coupled with electric transmission

Description: In the Dynamotive, driver sits on full-size, bench-type seat, has extra leg room, greater vision, manufacturer reports. Controls are centralized; all instruments have been grouped on steering post column. Brakes are so designed that emergency brakes are instantly applied by the same pedal in case of hydraulic brake failure. Ease of maintenance and exceptional accessibility of engine are reported.

Optional feature is a load indicator, showing weight of material on the truck's forks at any given time — as a safety factor to prevent overloading. Other optional equipment includes engine-hour meter, headlights, two-way radio, water and catalytic mufflers. Unit is wired with silicone insulation, has heavy section rolled manganese alloy uprights, ball-bearing mounted carriage and upright rollers, hydraulic safety fuses on the duo-lift models.

Capacities of the Dynamotive range from 4000 to 6000 lb. Heights of telescoping lifts are 124", with a standard 83" overall height, for either mono-lift, or duo-lift models.

(Development of the Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago 20, Ill. . . . or for more information check CP 2867 on handy form, pages 2 and 3.)



Atlas Powder Company speeds corn sugar handling with The AIRVEYOR

Atlas Powder relies on the Airveyor to speed unloading of refined corn sugar, used for moisture conditioning of many products as well as in chemical synthesis. Large quantities of corn sugar are used in the production of sorbitol, which is a hexahydric alcohol. Atlas was first to use the Airveyor for this bulk handling.

In addition to speedy conveying, the Airveyor piping provides complete protection against contamination, extremely important in the handling of raw materials for making sorbitol.

If you are now moving, or planning to move dry, granular materials in bulk, why not call on Fuller for helpful information? Fuller has specialized in air conveying for 26 years. Write today!

Fuller CONVEYS BY AIR . . . NOTHING MOVES BUT THE MATERIAL

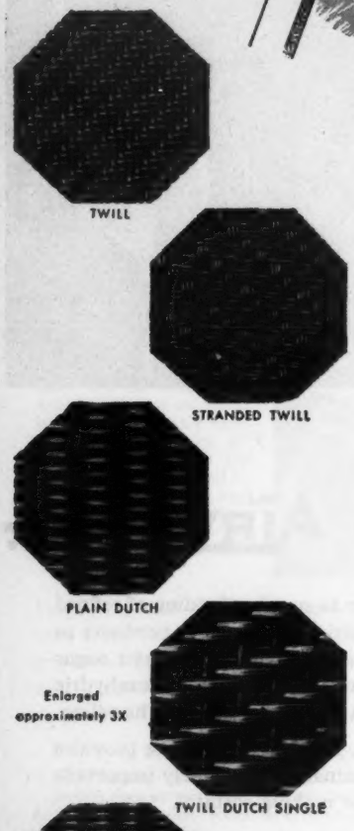
FULLER COMPANY, Catasauqua, Pa.
Chicago 3, 120 S. LaSalle St.
San Francisco 4, 420 Chancery Bldg.
Los Angeles 36, 5225 Wilshire Blvd.
Birmingham 3, Ala., Brown-Marx Bldg.

A-161
1851

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • • • COMPRESSORS AND VACUUM PUMPS • • • FEEDERS AND ASSOCIATED EQUIPMENT

When inquiring check CP 2868 on handy form, pgs. 2-3

Newark Metallic Filter Cloth . . .



Newark Metallic Filter Cloth does stop solids — the wedge-shaped openings allow only the filtrate to pass through. And, Newark Cloth is reversible, both sides being identical. Newark Metallic Filter Cloth is woven firmly and uniformly without loose wires, guaranteeing good filtration all over.

Newark Metallic Filter Cloth is available in a variety of weaves in *all* malleable metals, and is adaptable to practically all types of filters. When writing, please give us details on your process.

Send for our NEW Catalog E.

NEWARK for ACCURACY

Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

When inquiring check CP 2869 on handy form, pgs. 2-3

MATERIAL HANDLING

Silicone insulated motors are included features of lift truck . . .

duolift rams on electric unit have leakage return

Uses: For general materials handling requiring use of electric fork lift truck.

Features: Series includes features of silicone insulated motors, duolift rams with leakage return, hydraulic safety fuses, and easy

Telescopic lift height is 132 inches

accessibility for maintenance. Manufacturer reports the series has the highest lift speed of any electric truck.

Description: Standard Skylift CF Line of lift trucks series covers the 1000 to 4000 lb load class. Construction features also include maximum protection from damage from overheating, protection of ram and plunger from dirt and damage, and locked load position should line rupture.

Series also includes upright channels of heavy rolled steel sections; interchangeable carriage and upright rollers mounted on sealed ball bearings, and widely-spaced

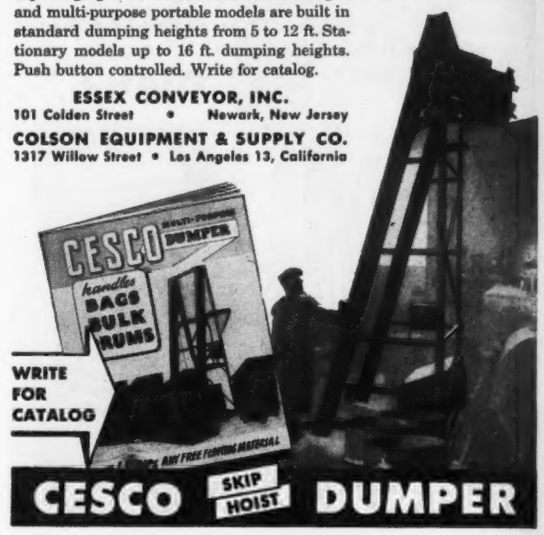
Save time! Prevent accidents!

LIFT AND DUMP MECHANICALLY

BAGS
BARRELS
DRUMS
BOXES

REDUCE HANDLING COSTS with a Cesco Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

ESSEX CONVEYOR, INC.
101 Colden Street • Newark, New Jersey
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



CESCO SKIP HOIST DUMPER

When inquiring check CP 2870 on handy form, pgs. 2-3

● **NOW you can handle granular fines without danger of contamination! Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight fitting cast chrome-nickel-molybdenum alloy steel lips to stop leakage and resist abrasion. For a detailed description on all the important features, write for Bulletin 2236.**

BLAW-KNOX COMPANY
Blaw-Knox Equipment Division
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX CLAMSHELL BUCKETS
FOR CHEMICAL AND FERTILIZER PLANTS

When inquiring check CP 2871 on handy form, pgs. 2-3

MODERN TIME AND COST SAVERS
BUILT BY... Standard GRAVITY & POWER CONVEYORS

LIGHT
AND EASY TO CARRY
Put it where you need it!

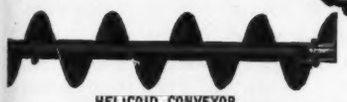
LITEWATE
Roller Conveyor

Ideal for loading and unloading. Handles commodities up to 60 lbs. — moves bags, cases, hollow bottom, narrow, cleated and irregular packages. Available in 10 ft. and 5 ft. straight sections and 90° and 45° curves. Keep LITEWATE conveyors handy in your storage and shipping rooms — carry them in your trucks. Write for LITEWATE Conveyor Bulletin — address Dept. CP-83.

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minn.
Sales and Service in Principal Cities

When inquiring check CP 2872 on handy form, pgs. 2-3

Screw Conveyor and ACCESSORIES— ALL TYPES The HAMMOND LINE

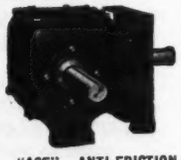


HELICOID CONVEYOR
COLD ROLLED TO YOUR SPECIFICATIONS all standard sizes—special diameters and gauges of flight.

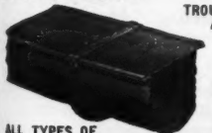
END THRUSTS
Full line—Ball and Roller Bearing types

SECTIONAL FLIGHT
Self-supporting flights with uniform pitch and diameter, in all sizes. Also ribbon, cut flight, etc.

TROUGH ALL HANGERS TYPES



"ACE" ANTI-FRICTION COUNTERSHAFT BOX END protected gearing—interchangeable with all old styles.



ALL TYPES OF CONVEYOR TROUGHS with "U" Edging and "Tite-Seal" Cover Clamps

FAMOUS NU-HY BUCKET for Grain and Granular material. Delivers highest capacities.

WRITE FOR CATALOG

Screw Conveyor Corporation
HOFFMAN ST. HAMMOND, IND. — WINONA, MISSISSIPPI
ENGINEERS — HAMMOND PRODUCTS — MANUFACTURERS

When inquiring check CP 2873 on handy form, pgs. 2-3

adjustable side thrust rollers on fork carriage.

All models have telescopic lift of 132" and have four speeds in both forward and reverse. A non-plugging speed control by foot accelerator prevents reversing truck in other than first speed. Direction control lever is located on steering column.

Unit offers complete dead-man controls; when operator's foot is off the accelerator, all current is automatically shut off. The brake is interconnected with the seat so that the truck is automatically braked when operator leaves the driver's seat.

(Development of the Automatic Transportation Company, Dept. CP, 149 W. 87th St., Chicago 20, Ill. . . . or for more information check CP 2874 on handy form, pages 2 and 3.)

Boards of kiln-dried oak give prolonged wear to pallets . . .

painted steel stringers can't crack, warp, or rot in service

Uses: For stacking, storing or moving material requiring pallet use.

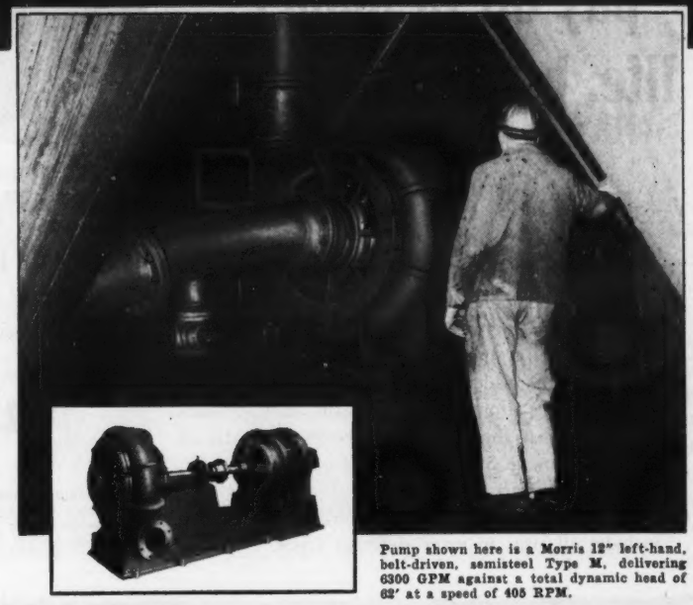
Features: Deck boards are made of kiln-dried oak; stringers are of steel and can't crack, warp or rot.

Description: Deck boards are secured to steel stringers with cadmium-plated steel carriage bolts against vibration. Nuts are recessed flush with deck boards which can be easily replaced by use of an Allen wrench. Preservative-treated boards are optional.

(Wilco Lifetime Pallets are manufactured by Williford Mfg. Co., Dept. CP, P.O. Box 6095, Buntyn Station, Memphis 11, Tenn. . . . or for more information check CP 2875 on handy form, pages 2 and 3.)

Data on vapor pressure of Hydrogen Bromide is nomographed on page 174

. . . for overall economy in delivering circulating water



Pump shown here is a Morris 12" left-hand, belt-driven, semisteel Type M, delivering 6300 GPM against a total dynamic head of 62' at a speed of 405 RPM.

MORRIS Type M Pump

The small high-speed pumps commonly used for circulating water are highly efficient—*if the water is relatively free of fine abrasive materials.*

When abrasive-laden water is carried, the high speed of these pumps accelerates the grinding action of gritty particles. Sealing rings are quickly cut and scored . . . the thinner casting sections break down rapidly—normal life expectancy is halved, frequently quartered.

MORRIS DESIGN ASSURES ECONOMICAL LONG LIFE

Where total heads do not exceed 120 feet, the larger, low-speed Morris type M Pump is more efficient for handling circulating water containing abrasive solids. Even the occasional big "tramp" piece—always a threat to the small pump installation—goes through the Morris without trouble. Depending on the pump size and total head, speeds range from a low of 188 RPM to a high of 1119 RPM.

Wearing parts are double the thickness of conventional clear water pumps. With economical upkeep a primary consideration in the design, sections subjected to most wear have been subdivided so that the greatest erosion bears upon smaller, less expensive parts. Optional use of special corrosion-and-abrasive-resistant alloys further increases the inherent long life on the Morris Type M.

Morris Engineers have been building pumps for all types of service for 88 years. Let them consult with you on your pumping problems. No cost. No obligation. Or, send for free Bulletin 175.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Representative in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 2876 on handy form, pgs. 2-3

These buckets pay off in longer life, better handling

Equip your elevators with rugged, dependable LINK-BELT Cast Buckets

YES, the complete line of Link-Belt Cast Buckets pays dividends in proper filling, clean discharge. Improved casting methods assure uniformity.

And they're made of highest grade malleable iron or Promal (the stronger, longer wearing metal). That's why they resist abrasion and corrosion . . . stand up under hard usage. Smooth, seamless surface minimizes friction and wear.

Choose Link-Belt Cast Buckets from the line that includes all sizes in many different styles. Link-Belt also builds steel buckets of various designs. Call the Link-Belt sales office or distributor nearest you for local stocks and complete information.

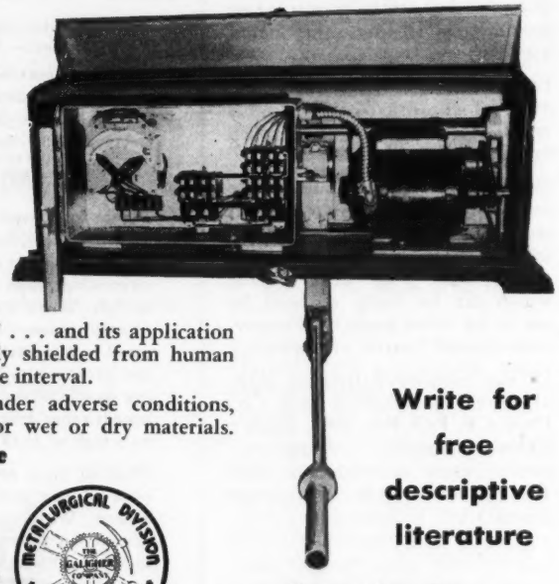
LINK-BELT

CAST ELEVATOR BUCKETS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13.217

When inquiring check CP 2877 on handy form, pgs. 2-3

He knows he can count on GEARY-JENNINGS for accurate samples



It's the same story everwhere in the chemical process industries . . . supreme confidence in the accuracy of the Geary-Jennings Sampler. Its unique basic principle is right . . . "all of the stream part of the time" . . . and its application by this rugged machine is entirely automatic, tightly shielded from human error or tampering, and adjustable to any required time interval.

There are Geary-Jennings models for operation under adverse conditions, heavy duty service and all the usual applications for wet or dry materials.

Leaders in Experience & Service

THE GALIGHER CO.

METALLURGICAL DIVISION — ENGINEERING SERVICE

CONSULTATION • ORE TESTING
PLANT DESIGN • GEOLOGIC INVESTIGATION

HOME OFFICE: 545 West 8th South, Salt Lake City, Utah, P. O. Box 209.
EASTERN OFFICE: 921 Bergen Avenue, Jersey City, New Jersey
Agents in All Principal Foreign Mining Districts

Write for free descriptive literature

Geary-Jennings Sampler

"All of the stream part of the time"

When inquiring check CP 2878 on handy form, pgs. 2-3

Lift truck can carry own scale for weighing merchandise quickly in plant . . .

indicator can be removed from swivel arm, gives instantaneous readings

Uses: For weighing merchandise and parts from lift truck while material is being transferred, stacked, or inventoried.

Features: Allows quick weighing of material at points distant from central weighing station. Indicator can be removed for use in other points in the shop or warehouse.

Description: As photo shows, indicator is supported from swivel arm attached to electric or hydraulic lift trucks. Indicator has 16" diam dial

Scale is instantly readable

with ball bearing swivel hook and rapid adjustment for tare loads. Numerous capacities are available. Readings are instantaneous. Being mechanical, indicator is not affected by temperature.

(Development of the W. C. Dillon & Co., Inc., Dept. CP, P. O. Box 3008, 14620 Keswick St., Van Nuys, Calif. . . . or for more information check CP 2879 on handy form, pages 2 and 3.)

Describes flexible hose for exhausting and conveying

Properties and uses of wire-reinforced, flexible, Neoprene-coated-fabric hose are extensively covered in 12-page, illustrated catalog. Main use is either as suction or pressure exhaust hose, but has been used as boots and covers for shafts, etc., and for conveying applications. Catalog tells pressure and suction limits, temperature ranges, sizes and weights for three types of hose. Couplings, reducers, branches and other accessories are shown.

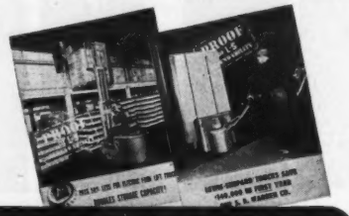
Charts are provided for finding friction loss. Cat 35 is issued by American Ventilating Hose Co., Division of Callahan Zinc-Lead Co., Dept. CP, 100 Park Ave., New York 17, N. Y. When inquiring specify CP 2880 on pages 2 and 3.

WANT PROOF?

. . . that Lewis-Shepard Trucks can save you money.

Then, write for these "Proof Folders" that show how companies in many industries are saving with Lewis-Shepard Electric Trucks. You're invited to inspect this proof . . . draw your own conclusions.

The "Proof Folders" include facts, figures, and familiar company names. Every word is a direct quotation or approved by the company concerned. They are the true experiences of both large and small users, told in a way that's interesting and informative. Write for these "Proof Folders" today!



LEWIS-SHEPARD

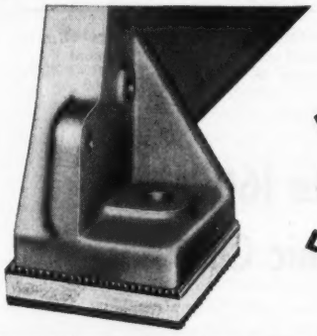
The MASTER Line

1030-8 WALNUT ST., WATERTOWN 72, MASS.

Nationwide Service—See "Trucks, Industrial" in your Yellow Phone Book

When inquiring check CP 2881 on handy form, pgs. 2-3

It's SIMPLE To Control VIBRATION and NOISE with Elasto-Rib...



NO BOLTING

NO CEMENTING

LOW COST

Elasto-Rib effectively stops transmission of vibration and noise by utilizing the elastic and damping properties of both cork and rubber.

It is fast and easy to install. For most machine applications, no bolts, lag screws or cement are required. Sheets 24" x 36" can be sawed or cut to size as needed.

New, illustrated booklet tells all about Elasto-Rib and how to install it. Ask for ER-701 and free sample.

THE KORFUND COMPANY, INC.

KORFUND VIBRATION CONTROL — SPRINGS — RUBBER — CORK

48-13E Thirty Second Place, Long Island City 1, N. Y.

In Canada: 510 Canal Bank, Ville St. Pierre, Montreal

When inquiring check CP 2882 on handy form, pgs. 2-3

Material moves evenly, steadily into furnace for treatment . . .

pushers take parts from hopper to next level

Uses: For continuous loading of material into heat treating furnace.

Features: Removal from hopper is automatic and material is discharged in even, metered quantities into an endless belt-type heat treating furnace.

Description: Man-O-Steel allows one man to load from 500 to 4000 lb/hr of small stampings, forgings or castings to the full capacity of the furnace for an indefinite run. In operation, a

Unloading is continuous operation

series of synchronized, submerged vertical-moving pushers, cut on a 30° angle, remove parts from the hopper, raising them to the next level and causing them to roll off by force of gravity. Material continues to be elevated and transferred in this way through a series of cycles until discharged into the furnace.

Custom-made to fit special space requirements, the average dimension of the loader is 10′ high by 8′ long. Unit is made of steel parts, complete with drive, variable speed controls, overload safety clutch, reversing starters and pushbutton controls.

(Development of the Michigan Crane & Conveyor Co., Dept. CP, 115 McKinstry St., Detroit, Mich. . . . or for more information check CP 2883 on convenient Reader Service slip between pages two and three.)

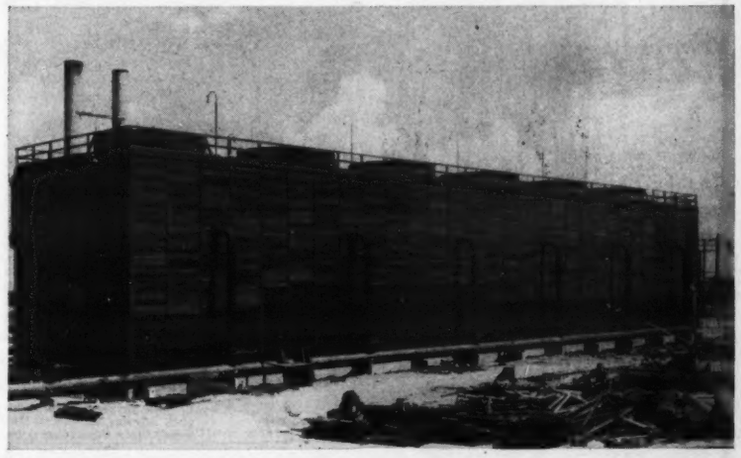
INDUSTRY NEWS IN BRIEF . . .

ONE DROP OF WATER IS THE TARGET OF ENGINEERS AT SANTA FE TANK & TOWER COMPANY

To the engineer who designs a cooling tower, *one drop* of water is more than just "a drop in the bucket." He attaches a lot of importance to it . . because his job is to concentrate on producing a maximum rate of *heat dissipation* from *each* drop of water that is to pass through the cooling tower. Multiplied many times, of course, the single drop of water effects the over-all efficiency of the tower.

The Santa Fe Tank & Tower Company, Los Angeles, has utilized a highly successful engineering formula for properly *balancing* each drop of water in relation to the exact ratio of air required to cool it. This formula has resulted in a high degree of operating *efficiency*.

The Santa Fe *pattern* for cooling tower design also includes a new method of deck design and deck spacing that exposes each *drop* of water to the air for a longer period of time without decreasing the free flow of air through the tower. This "prolonged" air-water contact has proven to be an important *efficiency* factor.



The cooling tower shown here is a 6 cell Mechanical Draft unit installed at an oil refinery where gasoline and petroleum by-products are processed. Additional information is available. Write to Santa Fe Tank & Tower Company, 5401 S. Boyle Ave., Los Angeles 58, California. Data is also available on Wood Pipe, Wood Tanks, Gas Scrubbers and other industrial wood specialties. Santa Fe maintains branch offices in all principal cities.

When inquiring check CP 2884 on handy form, pgs. 2-3

AMERICAN CHEMICAL PAINT COMPANY
AMBLER PENNA.

Technical Service Data Sheet
Subject: *GRANODIZING** FOR LONG PAINT LIFE ON STEEL

"GRANODINE" FORMS A DURABLE PAINT BOND

Granodizing forms a crystalline, zinc phosphate coating on steel. This ACP paint-bonding process chemically changes the surface of steel into an inert non-metallic coating made up of thousands of microscopic zinc phosphate crystals.

Granodized steel thus presents a surface much more receptive to paint than untreated steel. Its crystalline structure permits a firm and durable "keying" or bonding of the paint finish. And the "Granodine" zinc phosphate coating itself is actually integral with the metal from which it is formed.

"GRANODINE" CAN BE APPLIED BY DIPPING, SPRAYING OR BRUSHING

Granodizing can be accomplished by:

1 Dipping the work in tanks;
2 Spraying the parts in a power washer; or
3 Brushing, spraying, or flow-coating the work with portable hand equipment.

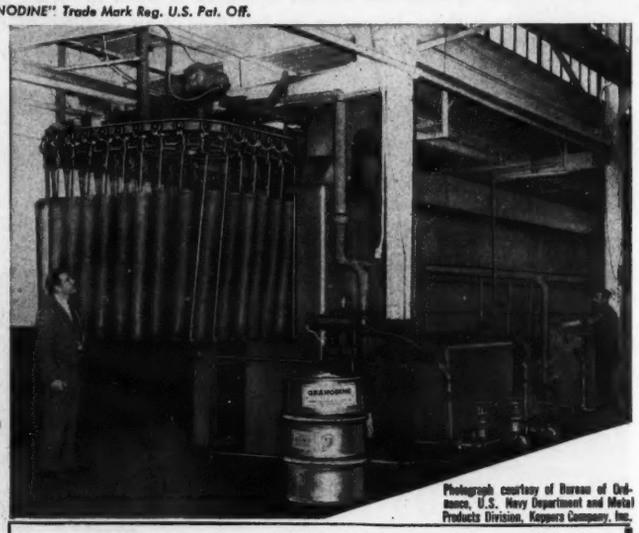
Choice of process is usually decided by such factors as the size, nature, and volume of production.

"GRANODINE" STANDARD PRACTICE ON BOTH CIVILIAN AND MILITARY PRODUCTS

Automobile bodies and sheet metal parts, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, tanks, trucks, jeeps, containers for small arms, cartridge tanks, 5-gallon gasoline containers, vehicular sheet metal, steel drums and, in general, products constructed of cold-rolled steel in large and continuous production are typical of the many products whose paint finish is protected by "Granodine".

In military production, "Granodine" is used to obtain a zinc phosphate finish meeting Grade I of JAN-C-490 and equivalent requirements of other specifications.

*"GRANODINE" Trade Mark Reg. U.S. Pat. Off.



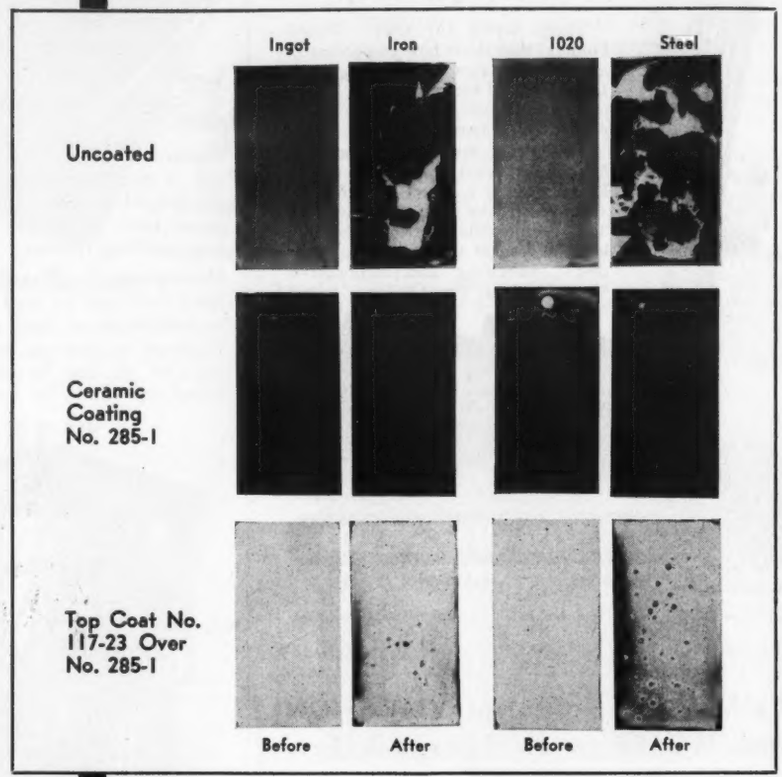
Photograph courtesy of Bureau of Ordnance, U.S. Navy Department and Metal Products Division, Keppers Company, Inc.

Typical power spray washing machine for the automatic application of a protective phosphate coating to metal parts in preparation for painting. These 5" rocket motor tubes, as well as products made of cold rolled sheet steel, are effectively phosphate coated in such equipment.

CHEMICALS ACP PROCESSES

When inquiring check CP 2885 on handy form, pgs. 2-3

corrosion control



Effect of heating iron and steel uncoated (top), ceramic coated (center), and ceramic coated plus radiant energy reflective top coating (bottom) for 72 hours at 1600°F

Temperatures up to 1600°F Resisted by Ceramic Coatings

Also withstand acids and oxidation, reflect radiant energy, resist molten metals, inhibit corrosion, and increase metal strength

RESEARCH work at the University of Illinois and other institutions has resulted in the development of high temperature resistant ceramic coatings which also have a number of other valuable properties. This program is being furthered by the commercial application of high temperature resistant ceramic coatings presently under way in a number of industrial plants.

Specific forms of the ceramic coatings will:

1—Withstand acids, including fuming nitric
2—Effectively retard metal oxidation
3—Reflect radiant energy
4—Resist molten metals
5—Strongly inhibit intergranular corrosion
6—Improve tensile, stress rupture, and fatigue properties of heated metals

The protection afforded to metals from the effects of high temperatures is shown in the accompanying illustration. Uncoated and ceramic coated ingot iron and 1020 low carbon steel were heated for 72 hours at 1600°F. As shown, the effect of the heat on the uncoated metal is completely destructive. Effective protection given by ceramic base coats is illustrated by center row of samples. Additional protection provided by top coat which reflects radiant energy may be seen from bottom row.

Selected ceramic coatings developed for low alloy steels at the University of Illinois had a firing time of 4 to 6 minutes at 1400 to 1900°F, an average of 40 grams of coating being applied per sq ft. These coatings were found to protect metals up to 1200 to 1400°F, resist thermal shock at temperatures from 900 to 1300°F by immersion in water, and to have good resistance to acids.

This serves to point out that ceramic coatings may be selected on at least one or more of four properties, (a) resistance to high temperature, (b) permissible firing temperature, (c) resistance to severe thermal shock, (d) ability to resist acid attack.

Specific application may favor one property above that of others. For example, ceramic coating No. 250-2 is undergoing tests for its resistance to fuming nitric acid at 160°F. After 192 hours, the attack on the coating is scarcely measurable. This ability to withstand acids may outweigh maximum resistance to high temperature.

Coatings developed for stainless steels and high alloy metals show higher values in all classifications of resistance than those described for the low alloy steels. This is due to the better heat stability of the metals used. Some work is being carried on at present to investigate the resistance of ceramic coatings to such molten metals as lead, zinc, and tin.

Equipment available for heating and tensile testing metals at the University of Illinois illustrate the considerable improvement in tensile strength at 2000°F furnished by a ceramic coating on stainless steel. Work at Cornell Aeronautical Laboratories shows the improvement in creep and rupture strength obtained by use of a ceramic coating on low alloy steel at 1200 to 1400°F.

Current research is being directed toward determination of the effect of ceramic coatings on non-strategic type stainless steels. In addition, coatings of maximum stability in high temperature service are being further developed. Also work is progressing on opaque ceramic base coats to protect metal from oxidation and still reflect radiant energy. Development of coatings for molybdenum and titanium for use of these metals at high temperatures is also of interest.

Some of the greatest savings to be gained by use of ceramic coatings may be made where uncoated steel is used at high temperatures and has been replaced, heretofore, as a matter of course.

(Technical paper, "Porcelain Enamels and Ceramic Coatings, Prime Inhibitors of Metal Corrosion," by Dwight G. Bennett, Research Professor of Ceramic Engineering, Dept. CP, University of Illinois, was presented at the recent National Association of Corrosion Engineers Conference in Chicago.)

Another new development using

B. F. Goodrich Chemical *raw materials*

B. F. Goodrich Chemical Co. does not make this industrial filter. We supply the Geon vinyl resin only.

CORROSION-RESISTANT PLASTIC REPLACES METAL—COSTS 66% LESS!

HERE'S another new use for rigid Geon vinyl plastic—one that improved the product and saved money to boot!

Formerly, expensive metal alloys were used to make essential parts of the leaf-type, acid filter pictured. But these metal parts would be eaten by corrosion—some in a matter of hours. Costly replacements and lost time ran up expenses.

So the manufacturer tried a rigid Geon vinyl plastic. He found it not only had the required corrosion resistance, but cost 3 to 4 times *less* than special metal alloys. Now the filter leaf frames, nuts and bolts holding the leaves together, rollers holding the leaves in place, heel plate and various pipe fittings are all made from rigid Geon.

Versatile Geon vinyl materials have helped solve many problems. Products made from them can be either rigid or flexible, transparent or colored. And Geon resists acids, alkalies, most solvents and other chemicals, heat and cold. Let us help you select a Geon material suited to your needs—to help you improve or develop more saleable products. For technical information, please write Dept. GF-4, B.F.Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

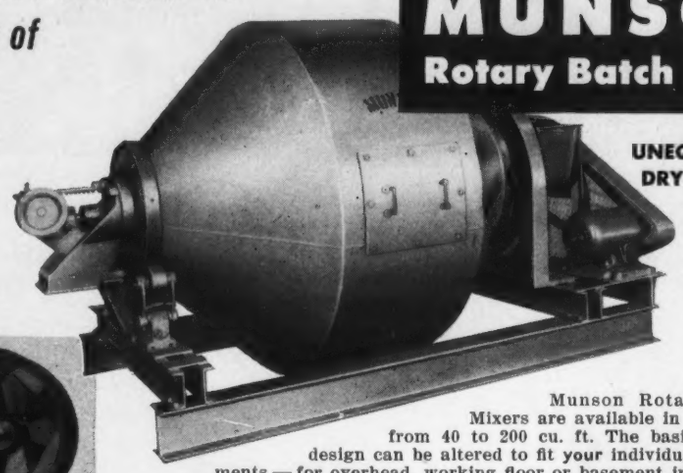
GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

When inquiring check CP 2886 on handy form, pgs. 2-3

MIX IT better ... MIX IT faster ... MIX IT with a

... the TUMBLING ACTION mixer for intimate blending of dry ingredients

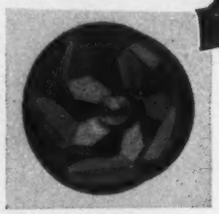
MUNSON
Rotary Batch Mixer



For intimate, accurate mixing of dry ingredients in the **shortest** time—the Munson Rotary Batch Mixer has proved its value on **hundreds** of different applications. Will not stratify ingredients — will not alter characteristics of basic components. Its famous 7-way mixing action, plus lower horsepower requirements and low operating costs, make the MUNSON **first choice** for performance and economy!

UNEQUALLED FOR DRY MIXING OF:
Chemicals, Fertilizers, Feeds, Cereals, Gelatin, Glue, Soap Compounds, etc.

NO OTHER MIXER HAS THIS MULTIPLE-BLENDING ACTION!



Lifters on inside of truncated cone ends continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock toward center. Conveyor flights on mixer shaft also stir and agitate stock back to center of drum — where mixing cycle repeats.

Munson Rotary Batch Mixers are available in capacities from 40 to 200 cu. ft. The basic Munson design can be altered to fit your individual requirements — for overhead, working floor or basement installation.

Munson engineers — skilled in processing procedures — will be glad to assist in solving your mixing problem. For full information, write us today ...

Other famous MUNSON products: Rotary Knife Cutters, Hammer Mills (25 to 100 HP), Attrition Mills (24" to 30"), Rotary Crushers . . .

MUNSON MILL MACHINERY CO. Dept. P-853 Utica, New York

When inquiring check CP 2887 on handy form, pgs. 2-3

GET NON-CLOG PERFORMANCE – AT MODERATE PRICES with AMERICAN-MARSH SEWAGE AND SUMP PUMPS

WRITE FOR YOUR COPY OF THIS NEW BULLETIN

In this brand-new bulletin, you'll find full data on the high efficiency—and non-clog design—of American-Marsh Sewage and Sump Pumps. Despite many superior construction features, they're competitively priced.

Described in detail are three non-clog types—the NKS Vertical, Wet Pit Single or Duplex; the NKV Vertical, Dry Pit; and the NKH Horizontal.

When you look at the performance tables and examine the construction drawings, you'll see why these top-quality sewage and sump pumps can deliver the trouble-free service you want.

A "pump selection" page will help you choose the model you need . . . and our engineering staff will gladly cooperate too. *INVESTIGATE NOW—WRITE FOR NON-CLOG BULLETIN 325-A.*

AMERICAN-MARSH PUMPS

BATTLE CREEK MICHIGAN

In Canada:
American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

CENTRIFUGAL, TURBINE, STEAM AND POWER PUMPS FOR TESTING, PROCESSING, BOILER FEED, FIRE PROTECTION, ETC.

When inquiring check CP 2887A on handy form, pgs. 2-3

Variety of corrosive chemicals are resisted by series of resin coatings . . .

number of formulations are offered to withstand specified materials, temperatures

A wide variety of corrosive conditions can be combated with line of protective coatings available from manufacturer. Included are cold set and heat-hardening phenolic resin coatings and some silicone base products. Different formulations are designed to meet varying temperature requirements and withstand specified chemicals. Some types are recommended for certain applications, such as the interior of vessels or for drum linings. Ten types will be discussed individually as follows:

7100 — General Type

This phenolic resin coating is the most versatile of the cold setting group and meets the majority of the requirements for the above-average resistant coating. Main advantage of the 7100 and others in this group is that they can be applied in very heavy film thickness. This permits practical application in the field to provide certain protection. This coating has excellent adhesion to most metals, wood, masonry, and composition board. It will withstand a sustained temperature of 400°F and can be used for most acids and alkalis.

7111 — For Aromatic Solvents

This coating is formulated with phenolic resins that have a greater degree or resistance to toluol, benzene, xylol, and other aromatic type solvents. This resistance is obtained after a 48 hour cure at room temperature. Type 7111 is non-toxic but should not be used wih food products as it will impart a slight odor. Field tests indicate this coating to be an excellent one for lining tank cars used in transporting water-white petroleum products. It is also suitable for protecting iron surfaces of gasoline storage tanks.

7122 — Caustic at Elevated Temperatures

Field tests have indicated that 50 to 70% sodium or potassium hydroxide solutions at 250 to 275°F will not affect this coating. Temperature limitation is 400°F. It is also suitable for certain acid services as elevated temperatures. It is not recommended for food products.

7122-X — Oxidizing Acids or Alkalis

This modification should be used where corrosive medium consists of an oxidizing type acid or alkali. It is also suitable for use where the acid encountered is the penetrating type, such as acetic or formic acid. Coating is non-toxic and can be used with food products. Temperature limitation is 250°F.

7155 — Hot Water Tanks, Vessel Interiors

This formulation was developed primarily for hot water tank application. Tests have indicated that

it is not affected by water of 160 to 180°F after 2½ to 3 years exposure. Since coating incorporates a "release agent" for uniform removal of solvent, it is suitable for use on the interior of vessels having small openings. It is non-toxic and has temperature limitation of 400°F.

7144 — Sulfite Liquors at Elevated Temperatures

Tests have indicated that this coating can be used successfully for waste sulfite liquors at elevated temperatures. Temperature limitation is 250°F.

3055 — 96% Sulfuric Acid

This coating is a heat-hardening straight phenolic which must be baked at temperatures of 300 to 400°F to obtain proper resistance. It is not affected by concentrated sulfuric acid. It is intended as a tank car lining for 96% sulfuric acid.

1338 — Drum Lining

This coating is to be used primarily as a drum lining. It also must be baked at temperatures of 300 to 400°F. Application should be limited to metals.

1450 — Temperatures up to 900°F

Field tests of this silicone base coating indicate that it is satisfactory for use up to 900°F and, in certain cases, it has been exposed with good results at temperatures up to 1000°F. Acid and alkali resistance is not as good as some other types. However, it will prevent high temperature oxidation of metals.

1425 — Temperature and Chemical Resistance

This silicone base coating is modified with phenolics so that high temperature resistance plus chemical resistance are obtained. Since it is still in the experimental stage, complete data are not yet available. Present tests indicate that it has good resistance to sulfuric acid at elevated temperatures. It also appears to retain flexibility in film strength at 700 to 800°F.

(Coatings are products of Ric-Wil Plastic Coating & Mfg. Corp., Dept. CP, 1290 Euclid Ave., Cleveland 15, Ohio . . . check CP 2888, pgs. 2 & 3.)

Resumé of chemical resistance of various types of rubber

Resistance of five different types of rubber to a number of chemicals is tabulated in three-page resumé. Various kinds of rubber included are Buna N, Buna S, natural, Neoprene, and Butyl. General groups of materials for which the resistance is tabulated are commercial organic chemicals, acids, salts, etc.

Resumé No. 53-2 is issued by Republic Rubber Div., Lee Rubber & Tire Corp., Dept. CP, Youngstown 1, Ohio. When inquiring specify CP 2889 on handy Reader Service slip between pages two and three.

Rx for shorter contact time!

Norton specially engineered carriers bring proved advantages to a wide range of processes

Whatever your specific application may be, it will pay you to investigate the many advantages of Norton catalyst carriers.

Made of ALUNDUM* (fused alpha alumina), these highly refractory carriers are outstanding for heat conductivity, chemical inertness, mechanical strength and abrasion-resistance. And Norton's exclusive *controlled structure* process offers you a choice of porosities. In pellets and rings, porosities range from medium to high. In spheres, porosities range from medium, with rough exterior for coating with catalyst... to high, with a network of open pores and rough exterior for impregnating with catalyst.

Chemical engineers are finding this Norton "Special Refractory Prescription" invaluable in processing many different products. For example, in meeting the rapidly growing demand for phthalic anhydride, Norton catalyst carriers aid in shortening catalyst contact time and in achieving the highly exothermic reaction in fixed bed converters.

Test Them Out

Find out just what Norton ALUNDUM catalyst carriers can do for you. See your Norton Representative for samples, or write to NORTON COMPANY, 567 New Bond Street, Worcester 6, Mass.

Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

NORTON

Special REFRACTORIES

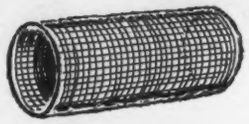
Making better products... to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

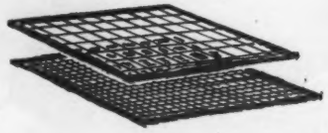
When inquiring check CP 2889A on handy form, pgs. 2-3

filter leaves?

strainers?



sizing screens?



Cambridge can build almost any type of wire cloth part to your specifications. Most likely the type of special wire cloth assembly you use has been built here in our plant. Our factory men can work from your specifications, or our Engineering Department can draw up working prints and specs based on merely your description of what the part must do. Why not let us quote the next time you need special wire cloth forms?

ALSO WIRE CLOTH IN BULK

...from warehouse or woven to order. We can also supply you with wire cloth in bulk for your own fabrication. Many common types are ready for immediate shipment from stock. And if your order needs special production, we'll schedule our looms to have the material in your plant without delay. We can weave wire cloth in any metal or alloy and in sizes from 20x250 mesh up to 4" openings.

WRITE FOR CATALOG
For complete information write direct for this illustrated catalog. Or call in your Cambridge Field Engineer for a conference in your plant. He's listed under "Wire Cloth" in your classified phone book.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department F
Cambridge 8, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 2890 on handy form, pgs. 2-3

CORROSION CONTROL

Amine controls corrosion in steam condensate systems . . .

forms thin protective film

Corrosion in steam condensate systems — resulting from the presence of oxygen and acid carbon dioxide — can be effectively controlled by the use of a film-forming amine, according to manufacturer. Product, fed to the boiler, vaporizes with the steam and deposits a very thin, non-wettable protective film on all metal surfaces wherever condensation occurs and throughout the system.

Material is said to minimize deposition, clean out old iron oxide deposits, increase heat transfer, improve valve and pump operation, and protect system during standby. Quantity required is on the order of two to three pounds of the compound per million pounds of steam. If only a part of return system needs protection, product may be injected into the appropriate branch steam line.

Material is not dangerous to handle and can be employed where contact steam is used to cook food or sterilize instruments. It is supplied in both solid and liquid forms.

(Hagafilm boiler compound is product of Hagan Corp., Dept. CP, Hagan Bldg., Pittsburgh 30, Pa. . . . or for more information check CP 2891 on handy Reader Service slip, pages 2 and 3.)

Selection of finish for clad steel plates aided by kit

To aid engineers and fabricators in the selection of desired finishes on clad steel plates, company has prepared a sample kit. Actual pieces of metal, polished to various specifications, are contained in pockets of a convenient reference folder.

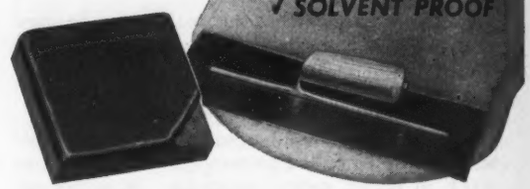
Clad steels consist of a layer of corrosion-resistant metal permanently bonded to a low-cost steel backing plate. For many types of equipment they are said to provide the same valuable properties as offered by the cladding metals in solid form.

(Available to qualified buyers and users of clad steels, kit may be obtained from Lukens Steel Co., Dept. CP, Coatesville, Pa.)

Ceilcrete

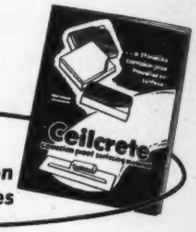
a stonelike corrosion proof trowelled on surface

✓ ACID PROOF
✓ ALKALI PROOF
✓ SOLVENT PROOF



TOPPING for FLOORS • WALLS ACID HOLDING TANKS • WASTE DISPOSAL SYSTEMS, ETC.

THE CEILCOTE COMPANY
4832 Ridge Road, Cleveland 9, Ohio

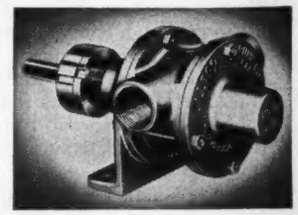


Send for technical data on its application, corrosion resistance properties

When inquiring check CP 2892 on handy form, pgs. 2-3

JABSCO STAINLESS STEEL PUMPS SOLVE CORROSIVE PUMPING PROBLEMS

Designed and Engineered for Chemical Applications



Jabsco's complete line of self-priming, corrosion-resistant pumps answer a multitude of pumping needs. Models 2810 (1" pipe size), 2870 (½"), and 2690 (⅜") have all metallic parts of Type 316 stainless steel. Shafts are supported by oversize, replaceable carbon bearings, stuffingbox type shaft seal with chemical resistant packing. Pumps function perfectly even with dry suction lifts approaching 15', no foot valve is required. When primed, they suck as high as 26'. Jabsco pumps have no metal-to-metal contact, no gears to wear or become noisy. The exclusive "camflexed" Neoprene Impeller is the only moving part. This tough, long-lived, wear resistant impeller is self-lubricated by the liquid pumped. Jabscos are economical, low in first cost, and trouble and maintenance free, even under continuous operation. May be mounted at any angle to pump thin or viscous liquids, and can be operated efficiently at low or high speeds. At 10' head and 1750 RPM, Model 2810 delivers up to 27 GPM, Model 2870 up to 10 GPM, Model 2690 up to 4 GPM. Other stainless steel models also available with ball bearings and mechanical seals. For complete information on how Jabsco can solve your pumping problems, write **Jabsco Pump Company,** 2031 North Lincoln Street, Burbank, California.

When inquiring check CP 2893 on handy form, pgs. 2-3

Uranium ore processing equipment made of alloy resists action of corrosive acids . . .

gives many months service where other materials failed after a few days

Corrosive acid solutions, used in the nation's largest uranium ore refining mill at Uravan, Colorado, are being successfully resisted by manufacturer's alloy. Parts made from the alloy are giving many months service in operations where other materials failed after a few days.

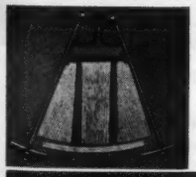
Spray nozzles fabricated of alloy which are exposed to hot roaster gases containing hydrochloric acid and chlorine fumes are still good after fourteen months service

Spray nozzles and piping being used in scrubbing towers handling corrosive acid solution are made of the alloy. Acid solution is sprayed into hot roaster gases containing abrasive dust, hydrochloric acid, and chlorine gas at about 660°F. Materials previously used for this service had to be replaced in anywhere from three days to three months. Alloy used at present is still giving satisfactory service after 14 months.

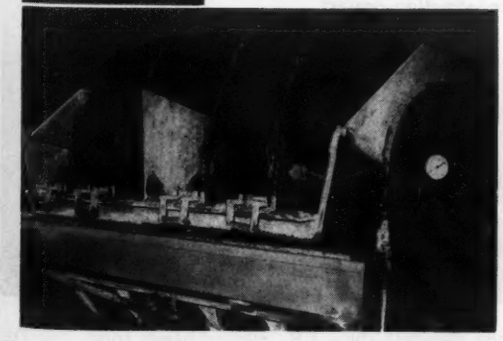
In the same setup, a pump impeller made of the same metal is used to provide pressure for the spray solution. Impeller has been in service for three years and is still in good condition. Pumps formerly used corroded rapidly and had to be replaced every three weeks.

Uranium ore leaching solution is heated in a heat exchanger made of the alloy. This unit, which

(*Continued on next page*)



Alloy leaves (similar to one at left) are used to dewater an acid slurry containing sodium and ferric sulfates in fillter (below), which has operated continuously for 32 months



How to get relief
from costly acid-line replacements

This Installation Manual shows how to get full value out of the unequalled corrosion-resistant and non-contaminating properties of PYREX brand "Double-Tough" glass pipe.

The simple installation procedures it describes have been forged from the experience of many chemical and food processing companies who have found relief from excessive acid-line replacement costs in PYREX pipe.

This manual shows how to design and hang PYREX lines in a practical way. It takes you through every step of the various installation practices.

It will answer the questions you are most likely to have in mind about the everyday utility and safety of PYREX pipe. The coupon is for your convenience. We'll be glad to send you a copy free.

What this manual tells you

This Installation Manual tells what you need to know about the thermal expansion, operating pressures and temperatures, and flexibility of PYREX "Double-Tough" glass pipe.

It describes in detail the recommended methods of supporting PYREX pipe and assembling joints.

It illustrates the simple methods to take care of pressure surges in the line, vibration, and lines in areas exposed to traffic.

It details plumbing techniques any mechanic can quickly master, including connecting PYREX pipe to other materials.

Some simple procedure described in this manual may show you the way out of expensive maintenance problems. Send for a copy today.

CORNING GLASS WORKS
CORNING, NEW YORK
Corning means research in Glass

CORNING GLASS WORKS, Corning, N. Y.
Plant Equipment Dept., CP-8
Please send me a copy of the "Installation Manual for PYREX brand "Double-Tough" Glass Pipe."

Name .....

Address .....

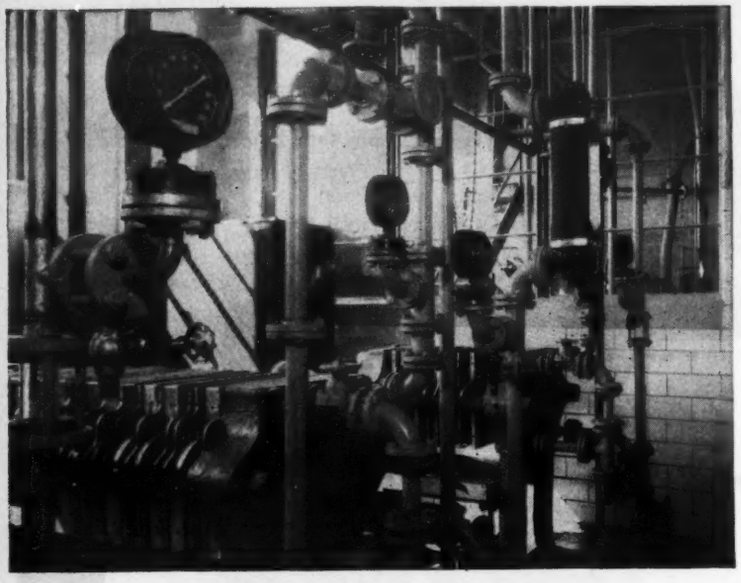
City ..... Zone ..... State .....

When inquiring check CP 2894 on handy form, pgs. 2-3

DOW

SARAN LINED PIPE SERVICES FILTER PRESS INSTALLATION

This Saran lined piping handles a carbon slurry of an organic acid solution



A large midwest corn processor required piping suitable for handling a carbon slurry of an organic acid solution to and from filter presses in a new pilot plant. Saran lined pipe, fittings and valves were the company's choice for the following reasons: Saran lined pipe, fittings and valves assure tight, leak-proof joints. The excellent corrosion resistance of strong, rigid saran lined pipe assures a maximum service life and a minimum of down time. Saran lined steel pipe can be delivered immediately, cut and threaded to your specifications, or fabricated in the field without special tools.

Saran lined pipe may be the answer to your own requirements. For further details write or call the SARAN LINED PIPE COMPANY, Ferndale, Michigan. Offices in New York • Boston Pittsburgh • Tulsa • Philadelphia • Chicago Portland • Indianapolis • San Francisco Houston • Denver • Los Angeles • Seattle Cleveland • Charleston, S. C. • Toronto Montreal.

RELATED SARAN PRODUCTS

Saran rubber tank lining • Saran rubber molding stock • Saran pipe and fittings • Saran tubing and fittings

Saran Lined Pipe Company
2415 Burdette Ave.,
Ferndale, Mich.

Please send me a copy of your catalog on Saran Lined Pipe, Valves and Fittings.

Name_____

Title_____

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Address_____

City_____

State_____

1503

you can depend on DOW PLASTICS DOW

When inquiring check CP 2895 on handy form, pgs. 2-3

(*Continued from preceding page*)

conducts live steam, is immersed in acid. Presence of various metallic ions in the solution, which is largely sulfuric acid, tends to accelerate corrosion rates. In this application, piping formerly used lasted only a few days. Exchangers now average eight months service before requiring replacement.

After leaching the wet acid slurry is dried in filters which are equipped with bells, rods, clamps, valves, and shafts fabricated from the same alloy. Parts have given almost three years service in spite of the action of sulfuric acid and the presence of large amounts of ferric and sodium sulfates.

Open pipes made of the metal are also being used to heat the vanadium and uranium bearing solutions. These lines include alloy fittings such as tees and ells. Pipe formerly used lasted only two months, but present piping shows no corrosion after having been in service twice this length of time.

(Uranium ore refining mill at Uravan, Colorado is owned and operated by United States Vanadium Co., Div. of Union Carbide & Carbon Corp. Hastelloy alloy C used in uranium processing equipment is product of Haynes Stellite Co., also a Div. of Union Carbide & Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . . check CP 2896 on form, pages 2 and 3.)

Report on membranes, linings for corrosion-proofing

Eight-page bulletin discusses in some detail company's corrosion-proofing service in tanks and equipment, including descriptions of various membranes and linings used. An interesting 2-page table presents the general resistivity of membranes featured by company to solutions from acetic acid to zinc hydrosulfite. Membrane materials include Nuran Rubber, Koroseal, Neoprene, soft or semi-hard rubber, and Nu-mastic. Specifications and range of applications are also given for these membranes.

A.I.A. File No. 35i-231 is available from Nukem Products Corp., Dept. CP, 110-120 Colgate Ave., Buffalo 20, N.Y. When inquiring specify CP 2897, pgs. 2 & 3.)

AGILENE AGILIDE

The Most Economical Answer

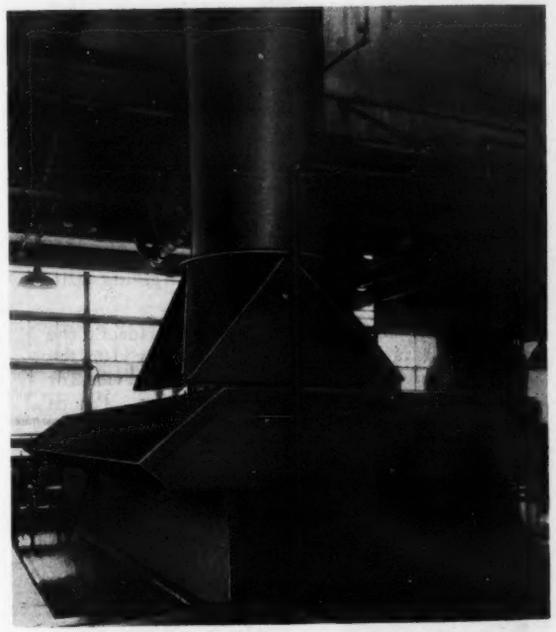
TO YOUR

CORROSION PROBLEMS

IN

CHEMICAL PROCESS EQUIPMENT

Agile's high-grade thermoplastic construction materials —AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered installation.



AGILIDE Acid Vapor-Exhaust Stack manufactured for Firestone Steel Products of Akron, Ohio. Outside diameter 31″, height 30 feet in three 10 foot flanged sections. An extremely large plastic construction project.

SEND YOUR INQUIRIES TO

AGILE PLASTICS

American Agile Corporation

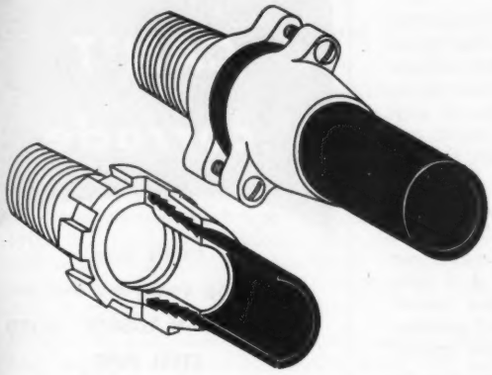
Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 2898 on handy form, pgs. 2-3

Non-slip fittings for plastic pipe

Difficulty in fastening flexible plastic pipe to other sections or to apparatus is said to have been overcome by manufacturer's brass fittings. These fittings are designed so that the barracuda teeth grip the plastic inside and outside of the pipe, completely overcoming the plastic cold flow property that has made non-slip joints difficult to attain.



Provides firm connection for flexible plastic pipe

Another advantage of the fittings is the fact that they do not cut down flow through the pipe as they require no space inside. Fittings are easily removed and can be used many times with full efficiency. For assembly, sleeve is simply slipped over pipe and the tapered adapter or coupling inserted in the pipe. As the sleeve is tightened, the set-back barracuda teeth grip the pipe permanently. Fittings come in sizes of ½, ¾, 1, 1¼, 1½, and 2". Closures are available both in fillister screw and spanner types. All parts are machined of heavy brass stock.

(Barracuda Fittings are product of Nelson Foundry Co., Dept. CP, 6116 Oakton St., Morton Grove, Ill. . . . or for more information check CP 2899 on handy form, pages 2 and 3.)

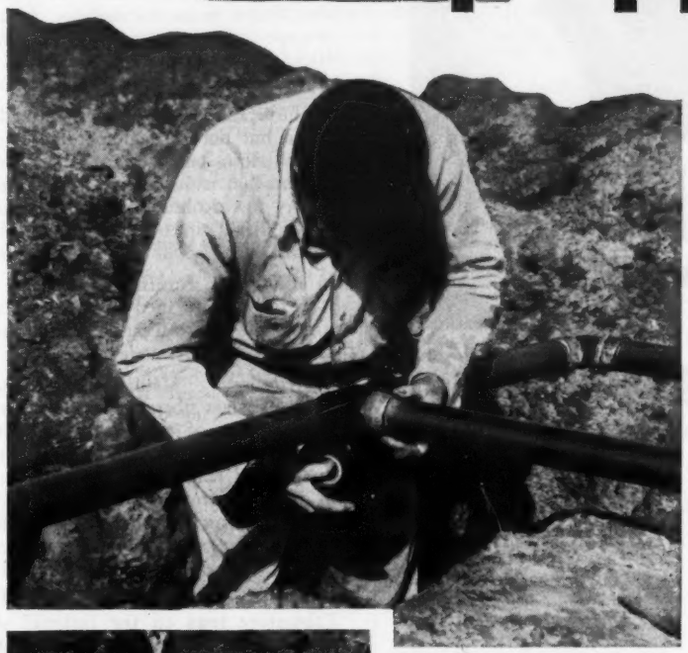
Aircraft stainless alloy products, ceramic coatings, available

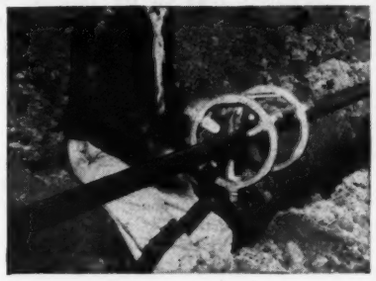
Stainless alloy products, ceramic coatings, and other items previously available only for aircraft production, as described in 12-page booklet, can now be obtained for general industrial use. Products are said to be of particular value to oil and chemical firms who are faced with problems arising from high temperatures and corrosion.

Products included in booklet are expansion joints; 50 and 500 hp gas turbine power plants; ceramic coatings for use on metals subject to high temperature service; shell mold castings of stainless alloys; and other products made of stainless steels or alloys.

Booklet No. PR-353 is issued by Solar Aircraft Co., Dept. CP, 2200 Pacific Highway, San Diego 12, Calif. When inquiring specify CP 2900 on handy form, pages 2 and 3.

Fight corrosion with easy 1-step application





***Polyken* Protective Tape Coatings** are ideal for use on couplings, joints and holidays. Conforms readily, goes on quickly . . . to speed the job and cut costs.

New *Polyken* Protective Tape Coatings may be applied by portable machine up to 30 feet per minute even by inexperienced workmen.

You can apply this *Polyken* pressure-sensitive tape economically by hand or machine just as it comes off the roll. Pipes are coated uniformly and evenly in one simple step. You don't have to mess with heating or mixing. There are no liquids, solvents or thinners to use . . . no cumbersome or expensive machines to operate or clean . . . and no delay for drying time.

Yet, simple as application is, *Polyken* Protective Tape Coatings can be depended upon to guard pipes against corrosion for a long, long time. And that goes for pipes in any location—above or below ground, in the plant or in the field.

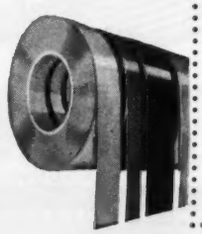
Polyken Tape No. 900, black (also available in gray, No. 910) is the polyethylene plastic tape coating made by an exclusive *Polyken* process. See for yourself how your corrosion problems can be solved this easy way. Mail the coupon for free samples and details.

TAILORED TO YOUR JOB

Polyken®

PROTECTIVE COATINGS

POLYKEN PRODUCTS DEPARTMENT OF THE KENDALL COMPANY



***Polyken*, Dept. CPH**
222 West Adams St., Chicago 6, Illinois

Please send me samples and further information on *POLYKEN* PROTECTIVE TAPE COATINGS.

Name_____ Title_____

Company_____

Street Address_____

City_____ Zone____ State_____

When inquiring check CP 2901 on handy form, pgs. 2-3

"Goodbye! To Product Contamination ...I've got Acid-Proof TANTALUM

Chemical Processing Equipment

"In making a high purity product such as ours, we can't take chances on picking up contamination from partly corroded equipment. Tests showed that tantalum is safe. Experience proved that tantalum is economical."

TANTALUM,
The Acid-Proof Metal

1. Acid-Proof means inert, not merely "resistant."
2. Full speed in heat transfer.
3. Freedom from thermal shock.

Manifold type heat exchanger used in distilling c. p. HCl. One of these units has been in service since 1938.

USE TANTALUM WITH ECONOMY
for most acid solutions, corrosive gases or vapors; not with HF, alkalis or substances containing free SO_3.

Acid-Proof **TANTALUM**

22405C

Fansteel Metallurgical Corporation NORTH CHICAGO, ILLINOIS, U.S.A.

When inquiring check CP 2902 on handy form, pgs. 2-3

Corrosion resistance is provided by resin-bonded laminate . . .

high strength material withstands variety of acids under specified conditions

Uses: Tanks, ducts, hoods, stacks, and piping are fabricated from the material. One application in which product has given good service over the past two years is in plating rooms for tanks, fume hoods, and piping.

Features: Phosphoric and hydrochloric acids may be handled by laminate in all strengths. One typical installation has withstood the action of 60% sulfuric acid for 18 months to-date. In general, material has been found to be suitable for combination of acids (except those containing fluorine) that restrict oxidizing types to 30% and total acid present to 40% by weight at temperatures up to 100°F.

Product can be used with some dilute solutions of alkali, but not with ammonium hydroxide or lime. Bleach solutions up to 10% concentration can be stored in tanks made of the material. It is satisfactory for alcohols, naphthas, benzene and formaldehyde in all aqueous solutions, crudes, and gasoline. Practically all acidic and inorganic salts are resisted.

In addition to furnishing corrosion resistance under a variety of specified conditions, laminate is quite strong. It is also light in weight and is an excellent dielectric, manufacturer reports.

Description: Material is composed of laminated matts of glass fibers impregnated with a chemically resistant type of polyester resin. Ducts made from product are offered in inside diameters of 4 to 54" in standard lengths of 12'. Stacks can be furnished in diameters from 4 to 54" in heights up to 60' and more. Piping is made in inside diameters from 2 to 48". Tanks and hoods are fabricated to specifications. Flat sheets are also offered of 4 x 8' for fabrication into any rectangular shape.

Laboratory tests on the material show it to have properties as follows. Because of tolerances in thickness, there may be some variation on an individual sample, however.

Tensile strength	7000 psi
Compressive strength	27,500 psi
Double shear strength	2000 psi
Flexural strength	13,000 to 20,000 psi
Modulus of elasticity	585,000 to 895,000 psi
Coefficient of expansion	3.1 x 10^{-5} per °C
Thermal conductivity Btu/hr/sq ft/ft/°F	0.16
Specific gravity	1.3

(Pla-Tank resin-bonded laminate products are manufactured by The Chemical Corp., Dept. CP, Springfield 9, Mass. . . . or for more information check CP 2903 on handy form, pages 2 and 3.)

Specs, applications of versatile, corrosion-proof PVC

Detailed properties and applications of manufacturer's rigid, non-plasticized polyvinyl chloride are presented in 4-page bulletin. Typical fabrications are illustrated. It is reported that material can be

Saran rubber CAN'T rust... CAN'T corrode

that's why leading engineers choose MPC SARAN RUBBER* LINED STEEL PIPE wherever corrosion is a problem!

You can be sure you're getting the highest degree of resistance to corrosive chemicals, oils, acids and solvents when MPC SARAN RUBBER-LINED STEEL PIPE is specified. Available in either fabricated light gauge steel or standard steel pipe in 10' and 20' standard lengths, ranging in size from 8" up... or fabricated to your exact requirements. Fittings in standard and special designs for all diameters.

For additional information write today to your nearest MPC representative or to our application engineering department.

You can lick corrosion. It's as easy as MPC!

*a development of The Dow Chemical Company

EST. mpc 1869

MICHIGAN PIPE COMPANY

Bay City • Michigan

Manufacturers of Wood-Lined Steel, Saran Rubber-Lined Steel, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co., Detroit, (Ferndale) Michigan.

When inquiring check CP 2904 on handy form, pgs. 2-3

stamped, sheared, sawed, ground, turned, milled, planed, drilled, embossed, drawn, swaged, etc. Chemicals to which PVC is resistant and not resistant, are also listed.

Bul 2B on Boltaron 6200 PVC is available from H.N. Hartwell & Son, Inc., Dept. CP, Park Square Bldg., Boston, Mass. When inquiring specify CP 2905 on handy form, pages 2 and 3.

Case histories of corrosion control at General Aniline . . .

chief field engineer describes specific problems and their approaches to the solution

In a recent address, R. C. Thiede, of the General Aniline Works, discussed a number of specific problems in corrosion control at their Grasselli, N. J. plant and their approaches to the solution. He believes that more investigational work on corrosion control should be carried on in plants. The value of discussing and publishing the findings of such work is pointed out.

Materials of construction, castings, and methods that have long been accepted as standard should not be neglected in such investigations. In dealing with problems of corrosion, it should be kept in mind that alloys were developed for specific conditions and should be thoroughly tested before use.

Steel is commonly used for handling sulfuric acid at 78% strength and higher. However, severe corrosion has been encountered even when handling acid at these concentrations. All steel gate valves failed because of pitting on gate and seat surfaces. First, valves with cast steel body and stainless steel gates and seats were installed. Because of difference in potential between stainless steel seat rings and stainless steel body, corrosion of steel at point of contact was accelerated and uncorroded rings often ended up in pipe line.

For sulfuric acid below the strength of oleum, alloy valves of FA-20 or its equivalent are now being successfully used. The higher initial cost has been found to be justified by the eight to ten times longer service life.

Another problem arose in connection with a steel pipeline handling 100% sulfuric acid. Line was used to fill small measuring tanks from overhead storage. When not in service, it was allowed to drain. Moisture diluted residual acid in line, causing corrosion. While the life of the steel line was approximately two years, stainless steel line replacing it has been entirely trouble free for six years so far.

On one particular process, an organic solution containing concentrations of approximately 5% phosphorus chlorides was being handled. While the lead line was trouble free, the best service line of the lead valves was three months. The all alloy valve installed has not required any maintenance for 2½ years except for a bonnet gasket renewal.

(Information obtained from address delivered at Plant Maintenance Conference in Cleveland by R. C. Thiede, chief field engineer, General Aniline Works, Div. of General Aniline & Film Corp., Dept. CP, Grasselli, N. J.)

When you have trouble handling

Chlorine
Bromine
Fluorine

. . . or their compounds

When you have a corrosion or purity problem connected with the handling of halogens or halides, consider the use of the Inco Nickel Alloys. They are among the few metallic materials which are successfully used to resist corrosion by chlorine, bromine, fluorine and their halides.

Chlorine—Tests as well as practical experience have shown nickel and the high-nickel alloys to be among the most useful of the common engineering materials for handling dry chlorine at temperatures up to 1000°F.

Bromine—The high resistance of Monel shipping drums to dry bromine has enabled bromine manufacturers to ship this dangerous corrosive in original purity, without fear of contamination or breakage, while cutting shipping costs in some cases by as much as 50%.*

Fluorine—Because nickel and Monel are highly resistant to ignition by fluorine, they are preferred materials for storage cylinders, piping and valves when handling fluorine under pressure.

Sodium Chloride—Potassium Chloride—Manufacturers rely on Inco Nickel Alloys to help preserve product purity during the entire refining operation. High-nickel alloys are counted on to assure long service life for such equipment as brine storage tanks, pumps, valves, filters, evaporators and driers.

Hydrogen Fluoride and Hydrofluoric Acid — Monel is more widely applicable to the handling of anhydrous HF and hydrofluoric acid solutions over a wide range of temperatures and concentrations than any other alloy.

Magnesium Chloride — Because Inconel is free from stress corrosion cracking in boiling magnesium chloride solutions, it has been accepted as a standard material for evaporating magnesium chloride.

Calcium Chloride — For long service life, nickel and Monel linings and flights are used in the large gas-fired rotary driers where wet calcium chloride contacts furnace gases.

Aluminum Chloride — Where aluminum chloride is employed as a catalyst, Monel reaction vessels and piping are often used to resist corrosion from dilute hydrochloric acid formed as a result of hydrolysis.

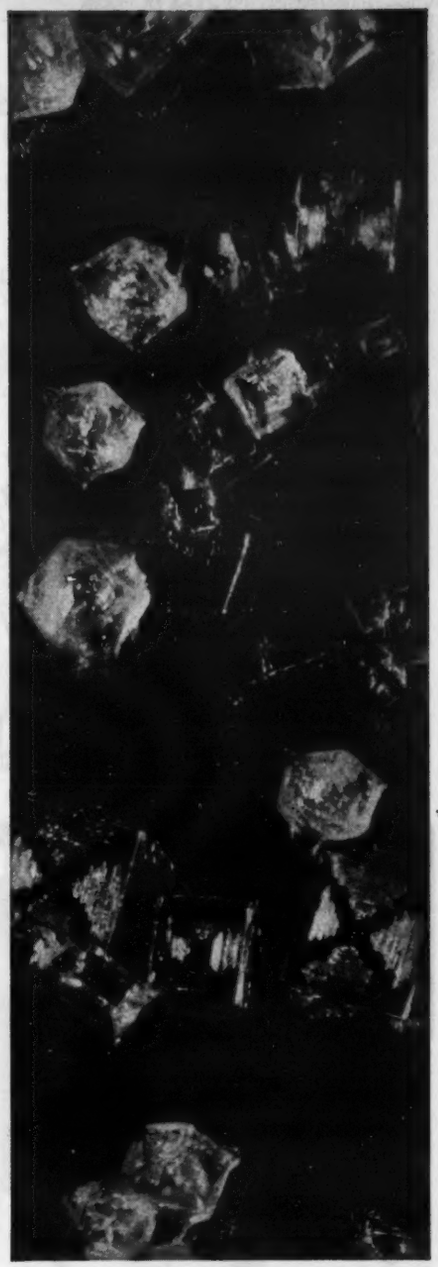
If your operations with halogens or their compounds seem to indicate the desirability of employing one of the Inco Nickel Alloys, it will be advisable to place equipment orders with your supplier well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability from warehouse and mill.

*Other materials which are shipped in nickel drums include: acetyl chloride, benzyl chloride, benzoyl chloride, pyrosulfuryl chloride, thionyl chloride, phosphorus trichloride, phosphorus oxychloride, and thiophosphoryl chloride.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, New York

Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL
"S"® MONEL • INCONEL® • INCONEL "X"®
INCONEL "W"® • INCOLOY® • NIMONIC® ALLOYS
NICKEL • LOW CARBON NICKEL • DURANICKEL®



Inorganic Acid Chlorides in Which Satisfactory Uses of Monel and Nickel Have Been Recorded

Corrosive Media	Monel	Nickel
Aluminum Chloride	Yes	
Ammonium Chloride	Yes	Yes
Antimony Chloride	Yes	
Arsenic Trichloride	Yes	Yes
Magnesium Chloride	Yes	Yes
Manganous Chloride	Yes	
Nitrosyl Chloride	Yes	Yes
Phosphorus Oxychloride	.....	Yes
Phosphorus Trichloride	.....	Yes
Silicon Tetrachloride		Yes
Sulfur Monochloride	Yes	Yes
Sulfuryl Chloride	Yes	Yes
Tin Tetrachloride	Yes	Yes
Titanium Tetrachloride	Yes	.....
Zinc Chloride	Yes	Yes

When inquiring check CP 2906 on handy form, pgs. 2-3

After you apply
RUSTBOND PRIMER

Rustbond Primer contains a new vehicle which wets and acts on rusty steel without forming water or oxygen. Bond to rusty steel *increases* with time. Not only is further rusting checked, but part of the original rust is eliminated, too.

HERE'S WHAT'S UNIQUE ABOUT RUSTBOND PRIMER

You can apply it right over lightly wire brushed rusty, corroded steel—without sandblasting, without expensive surface preparation. It is compatible with vinyls and other corrosion-resistant finish coats.

It coats edges as heavily as it does flat surfaces. Paint film failure on these edges is drastically reduced.

It is, itself, a good acid and solvent resistant paint. Reduces undercutting corrosion when steel is exposed by physical damage.

It's easy to apply. Stir and brush on like ordinary paint. Only one coat required.

Bulletin 150 describes some rigid tests made of Rustbond Primer by some of the country's largest chemical plants.

RPI

CARBOLINE COATINGS • CEMENTS • FINISHES

CARBOLINE COMPANY
329 Thornton Avenue · St. Louis 19, Mo.

When inquiring check CP 2907 on handy form, pgs. 2-3

When Your Process Demands FILTERING MIXING STORING

LOOK FOR THESE FEATURES

- PROVED, LOW-COST OPERATION
- EASY TO CLEAN
- DEPENDABLE, TROUBLE-FREE PERFORMANCE
- ALL SIZES AND CAPACITIES
- LOW UPKEEP

Regardless of the size or type of your installation, whatever your process may be, there's an Alsop Filter, Mixer and Storage and Mixing Tank to "fit your job", you can be sure of getting from Alsop the right unit properly applied — you can depend on Alsop proved performance features. Alsop Filters, Mixers and Tanks are available in a complete range of sizes and capacities and Alsop Equipment is custom fitted to your application by engineers who have thorough experience in Filtration and Agitation. Look for the proved features and the benefits that Alsop Filters, Mixers and Tanks can bring to your processing operations. Write for full information, recommendations and quotations.

ALSOP
ENGINEERING CORPORATION
808 Alsop Square, Milldale, Connecticut

When inquiring check CP 2908 on handy form, pgs. 2-3

Refinery shutdowns due to corrosion or plugging of systems reduced by rosin inhibitor . . .

forms protective film on metal surfaces and has loosening action on scale

Uses: Compound is recommended by manufacturer for use as an inhibitor where acids and anhydrides, such as hydrogen sulfide, hydrogen chloride, carbon dioxide, organic acids, and sulfur oxides may be present. Inhibitor is relatively heat stable and may be used where temperatures up to 500°F are encountered. Since it is relatively insoluble in oil, best results are obtained where small amounts of water are present in the hydrocarbon stream. These conditions suggest the following as a few of the many possible applications:

(1) In condenser systems (mild steel or alloys such as Monel or Admiralty) by injection of the inhibitor into the vapor line ahead of condensation area.

(2) In fractionating columns and gas-plant stripping towers by injection of inhibitor into the reflux return line.

(3) In heat exchangers operating below 500°F by injection of the inhibitor into the oil feed stream ahead of distillation columns.

(4) In crude distillation columns by injection of inhibitor into top of column.

(5) For protection of fractionators and condensers in HF alkylation units.

Features: Field tests in refinery operations have shown that downtime due to corrosion or plugging of systems has been reduced by use of the inhibitor. Metal losses have been lowered and the life of equipment extended. In addition to its corrosion inhibition properties, tests have shown that compound loosens and disperses scale. A number of gasoline fractionating columns have been unplugged in this manner with subsequent increases in production and reduced downtime for cleaning. Use of inhibitor has also been found to improve heat transfer rates.

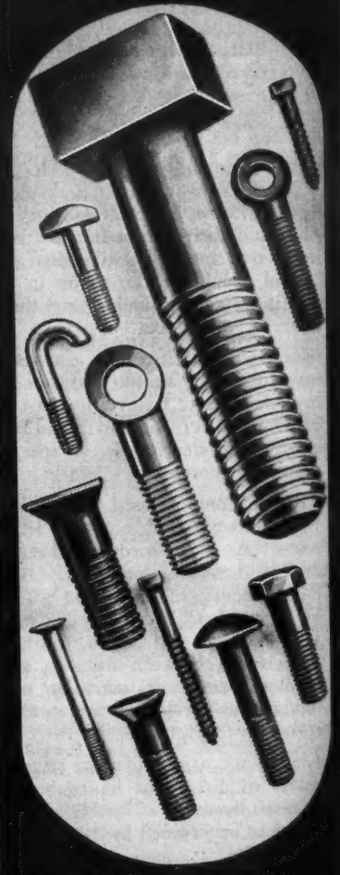
Description: Polyrad 1110A inhibitor is a specially compounded polyoxyalkylene derivative of manufacturer's Rosin Amine D, a primary rosin amine. It is a readily handled liquid at normal temperatures and remains fluid at temperatures as low as –10°F. Material is relatively insoluble in oil, but very soluble in water or natural brines. Physical properties of a typical sample of the inhibitor are as follows:

Specific gravity at 25/15.6°C	0.9736
Pounds per gallon	8.1
Vis (Brookfield), poises at 77°F	0.55
at −10°F	10.0
Flash point (Tag Open Cup), °F	72
Nitrogen content, %	1.42
Neutralization equiv	989

Compound is a derivative of an organic amine which is capable of forming protective monomolecular films on metal surfaces by virtue of its semipolar nature. The nitrogen atoms of the inhibitor molecules are adsorbed on the metal surface, resulting in a uniform barrier of closely

THREADED SPECIALTIES

TEE BOLTS
by an exclusive method



Among Pawtucket's many specialty products, these lower-cost tee-head bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket tee-head bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

BETTER BOLTS SINCE 1882

PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street · Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

When inquiring check CP 2909 on handy form, pgs. 2-3

ACE-HIDE

3-GAL. PAIL

1-QUART DIPPER

For handling corrosive solutions. Tough, resilient, practically indestructible. Made of a new synthetic rubber-base material called ACE-HIDE, unaffected by most acids and alkalies. Drip-proof spout pours easily directed stream. Graduated scale inside pail. ORDER NOW from your rubber goods distributor, or write us.

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY

93 Worth St., New York 13, N. Y.

When inquiring check CP 2910 on handy form, pgs. 2-3

Du Pont Teflon is inert to almost all chemicals*

Tough Du Pont plastic resists heat up to 500°F. . . . has zero water absorption . . . unique non-adhesive properties

Du Pont "Teflon" is superior in chemical resistance to any other known gasket or valve-packing material. It has lasted up to 300 times longer than conventional materials.

"Teflon" resists attack of all corrosive chemicals (except fluorine under extreme conditions, and molten alkali metals) . . . has a low coefficient of friction and zero water absorption. It serves in temperatures from -320°F. to 500°F., under a wide range of pressures. The unusual non-adhesive properties of "Teflon" make it ideal for uses where a non-sticky surface is needed.

Du Pont "Teflon" is used in gaskets, packing for pumps, valves, pistons and agitators . . . as an insulating material for generators, motors, high-temperature and high-voltage wires and cables.

We suggest you investigate the properties of "Teflon." Du Pont supplies "Teflon" in the form of molding powders and aqueous dispersions. We'll suggest names of processors of sheets, rods, tubes or finished parts. For information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Room 168 Du Pont Bldg., Wilmington 98, Delaware.

DU PONT
REG. U.S. PAT. OFF.

**Trademark for Du Pont tetrafluoroethylene resin*

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

When inquiring check CP 2911 on handy form, pgs. 2-3

packed inhibitor molecules. Film is not permanent but represents an equilibrium state wherein the molecules are adsorbing and desorbing at equivalent rates.

Inhibitor is designed to function most efficiently in acid media, at a pH of less than seven. For example, at concentrations of 0.05 to 0.20%, compound gives better than 99% protection to mild steel immersed in 15% HCl at 165°F for four hours.

Amount of inhibitor to be injected may be calculated based on the total quantity of fluid passing through the corrosive area. Amount of inhibitor required also depends on the corrosive environment and operating conditions. When the fluid stream to be treated contains on the order of 0.1% or less water, it has been found that about three parts per million of the inhibitor gives satisfactory corrosion protection and detergent action. For exceedingly corrosive conditions or higher water content, treatment may be started at concentrations as high as 10 to 20 ppm, with subsequent reductions based on coupon-study results.

It is recommended that the inhibitor be injected continuously rather than batch-wise. A chemical proportioning pump is ideal for injection although other means may be used. In many cases, it has been found possible to eliminate or considerably reduce the amount of ammonia used. Inhibitor, however, may be used with or without ammonia.

(Polyrad 1110A inhibitor is product of Hercules Powder Co., Dept. CP, Wilmington 99, Del. . . . check CP 2912 on handy form, pages 2 and 3.)

Hard facing furnishes corrosion resistance

Excellent anti-corrosive characteristics provided by hard facing is presented in illustrated four-page booklet. Method is also said to increase operating life of equipment by improving resistance to high temperature, impact, and abrasion. Booklet is issued by Cleveland Hard Facing, Inc., Dept. CP, 3047 Stillson Ave., Cleveland 5, Ohio. When inquiring specify CP 2913, pgs. 2 & 3.

NEED A LIGHT WEIGHT, CORROSION-PROOF STRUCTURE?

. . . your answer may be

Ampcoflex

AMPCOFLEX is both a corrosion-proof and self-supporting material that provides extraordinary service under adverse plant and processing conditions. It is an unplasticized, rigid polyvinyl chloride, inert to most acids, salts, alkalies, and standard pickling and plating solutions.

With AMPCOFLEX, ATLAS has developed specialized fabrication techniques making the advantages of this material available in strong, practical fabricated equipment. Any AMPCOFLEX fabrication requirement can be fulfilled in the ATLAS shops. Moreover, ATLAS is prepared to furnish all accessories . . . nuts, bolts, gaskets, pipe and pipe fittings . . . so that there will be no weak link in your entirely corrosion-proof AMPCOFLEX installation.

For complete data, write for Bulletin 9-1.

ATLAS Ampcoflex FABRICATIONS

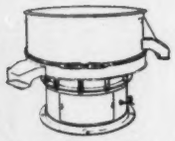
self-supporting, corrosion proof *structures*

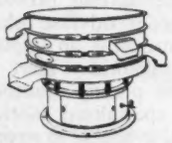
ATLAS MINERAL PRODUCTS CO.

MERTZTOWN, PENNSYLVANIA

When inquiring check CP 2914 on handy form, pgs. 2-3

SWECO *spiral process*
SEPARATORS


Single Deck Screening


Multi-Deck Screening

The vibration of the SWECO Separator can be changed to fit the screening requirements of any material. Speed and turbulence can be controlled *exactly* for maximum throughput of the product whether wet or dry. The exclusive patented single or multi-deck design of the SWECO Separator greatly increases screening surfaces and reduces floor space requirements. No special foundation or base required for instant production because there is no transmitted vibration. For full information write today for Bulletin 12-3.

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SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58, California
Cable Address: "SWECOLA"

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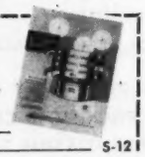

When inquiring check CP 2915 on handy form, pgs. 2-3

Recent Books

INORGANIC THERMOGRAVIMETRIC ANALYSIS

Reviewed by Edward I. Bradshaw, Jr.
Sinclair Research Laboratories, Inc.
Harvey, Ill.

Authored by Clément Duval of the Sorbonne, Paris, this 531-page book is based on the conviction that the phrase, "ignite to constant weight", at the end of an otherwise precisely detailed procedure represents an area in which inorganic analysis lags behind the possibilities offered by modern developments in instrumentation.

Using a thermobalance, which records changes in the weight of a heated substance as a function of time or temperature, the author has evaluated the 967 precipitates recommended in the literature for gravimetic analysis to determine whether they are, in fact, stable compounds at the temperatures specified. About 80% of these the author finds unsuitable, but he introduces 80 new methods which had been previously rejected by others because incorrect ignition temperatures were employed.

Thermogravimetric analysis may be utilized in several ways: as a method capable of automatically determining the weight of a precipitate in as little as 15 minutes; to determine the suitability of a precipitate for gravimetric analysis and to ascertain the optimum time and temperature ranges for ignition; and to check the purity of analytical reagents, especially with respect to water content of standards.

Details are given as to the construction and principles of the thermobalance, its applications, and suggested procedures. About 450 pages are devoted to an evaluation of gravimetric methods of anlysis for 62 elements.

To obtain "Inorganic Thermogravimetric Analysis" remit $11 *direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Tex. When inquiring specify CP* 2916 *on handy Reader Service slip between pages* 2 *and* 3.

MICROSCOPY for CHEMISTS

Reviewed by M. E. Runner, Assistant Professor
Department of Chemistry
Illinois Institute of Technology

"Microscopy for Chemists" by Harold F. Schaeffer is written for the beginner in this field. Containing 264 pages, the publication may well serve as a text for a one-semester course in chemical microscopy or aid the individual seeking to train himself independently. For the curiously interested, it offers sufficient diversity of subject matter to point out the general scope of applications of the microscope in chemistry. The well-selected bibliography of 31 texts and 84 recent papers serves to direct attention beyond the scope of this book and perhaps to aspects of microscopy that may arouse the reader's curiosity to the point of enthusiastic interest.

Text has been written from the viewpoint of teacher to student. The author has given considerable attention to the discussion of optical principles governing the microscope and its accessories, and a chapter on photomicrography has been included. This information serves as a brief review of pertinent physical optics which most chemists, having forgotten, will find adequate to refresh their memory. Study questions and problems are listed at the end of these chapters.

Thirty-two laboratory experiments appear on the last 89 pages of text and point the way to the attainment of practical experience in the manipulations and techniques of chemical microscopy by dealing with both inorganic and organic reactions. This readable text represents a simple way to become introduced to an increasingly popular method of chemical analysis.

To obtain "Microscopy for Chemists" remit $4.50 *direct to D. Van Nostrand Company, Inc., Dept. CP, 250 Fourth Ave., New York, N. Y. When inquiring specify CP* 2917 *on handy Reader Service slip between pages* 2 *and* 3.

PAPER CHROMATOGRAPHY
A Laboratory Manual

Reviewed by Jack W. Ralls
Research Chemist, G.D. Searle & Co.
Skokie, Ill.

Paper Chromatography by Richard J. Block, Raymond LeStrange and Gunter Zweig presents a splendid introduction to an increasingly important analytical technique. A chemist confronted with the problem of detecting small quantities of material in complex mixtures must consider paper partition chomatography as a possible solution.

The 195-page book presents a comprehensive review of the major contributions to the development of this powerful analytical tool. After a brief theoretical background, the general methods are described with numerous illustrations of apparatus. A section on the quantitative aspects of the technique follows these subjects. Perhaps the most valuable portion of the book deals with specific methods. They are discussed in sufficient detail so that a novice could follow directions with reasonable expectation of success. Methods applicable to amino acid, amine, protein, carbohy-

drate, aliphatic acid, steroid, purine, pyrimidine, phenol, aromatic acid, porphyrin, antibiotic, vitamin and ingoranic separations are included.

Experience in our laboratory has indicated that careful consultation of the original literature and precise control of all variables are essential for completely satisfactory and reproducible results. This book by Block, LeStrange and Zwieg can be recommended as a valuable starting point for anyone embarking upon the mastery of the useful technique known as paper chromatography.

To obtain "Paper Chromatography: A Laboratory Manual" remit $4.50 direct to Academic Press Incorporated, Department CP, 125 East 23rd Street, New York 10, New York. When inquiring about this publication reader may simply specify CP 2918 on handy Reader Service slip between pages two and three.

KINETICS and MECHANISM

Reviewed by Nathan Kornblum

Professor of Chemistry

Purdue University

"Kinetics and Mechanism" was written by Arthur A. Frost and Ralph G. Pearson, Associate Professors of Chemistry at Northwestern University.

Previous Textbooks on kinetics treat reaction mechanisms in a rather perfunctory manner. In contrast, this 343-page book by Frost and Pearson emphasizes the relationship between kinetics and reaction mechanism and discusses these matters in an exceptionally clear and direct manner.

The book includes chapters on:

- Empirical Treatment of Reaction Rates
- Experimental Methods and Treatment of Data
- Elementary Processes: Kinetic Theory of Gases
- Transition-State Theory
- Comparison of Theory with Experiment — Simple Gas Reactions
- Reactions in Solution
- Complex Reactions
- Homogeneous Catalysis
- Chain Reactions
- Some Reactions whose Mechanisms have been Investigated by Kinetic and Other Methods

This last chapter is an especially valuable part of the book. In this portion of the publication are discussed a diversity of reactions whose mechanisms have been investigated in detail; it constitutes a very effective teaching device.

Drs. Frost and Pearson have produced a really splendid volume, and it is a pleasure to commend it to all interested in the application of kinetics to the study of homogeneous chemical reactions.

To obtain "Kinetics and Mechanism" remit $6 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, New York. When inquiring specify CP 2919 on handy Reader Service slip between pages two and three.

TRADE PAPER EDITION
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SCHUTTE and KOERTING Company

ENGINEERING News

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Representatives in Principal Cities

THIS NEW BULLETIN ON SK GEAR PUMPS USES CUT-AWAY DRAWINGS, EASY-TO-READ TABLES, INSTALLATION PHOTOS, CRISP TEXT, TO HELP YOU ANALYZE ALL AVAILABLE TYPES IN TERMS OF YOUR REQUIREMENTS

While preparing this bulletin, we at SK checked with numerous users of SK Gear Pumps to obtain factual operating data.

A particularly pertinent interview was one we had with a company president whose comment offers a good clue to the way these pumps are engineered and built. He told us—

"I have more orders for my equipment than we can take care of right now and one of the reasons is because our machines stand up exceptionally well under some of the toughest conditions you can find in the ..... industry. We use SK Gear Pumps as original equipment on our machinery and I'm glad to be able to tell you that they are a major contributing factor to the efficiency and long-lasting characteristics of our machines."

SK Gear Pumps *are* well made. And, they are versatile for they can be constructed to handle materials ranging in viscosity from 30 to 10,000,000 S. S. U. Further, depending upon the material handled, capacities can range from 1 gph to 1000 gpm and pressures to 3500 psi.

Possibly you are familiar with the reputation these pumps have earned in the power field. But, do you know that hundreds of them are being used in the petrochemical industry, the food industry, in textiles, in the chemical process and other industries for pumping materials such as grape juice, tar, catsup, and the others listed in the box below.

In Bulletin 17-A, we have included material which will help to acquaint you with the types and sizes available, their characteristics and uses. If you can use a copy, drop us a line at the address below. We will send it immediately.

Here are some of the many materials now being handled by SK Gear Pumps:

Alcohol	Glycerol Water Mixture	Shortening
Asphalt	Gum Caustic Mixture	Solvents
Benzine	Heated Oils	Soap Solutions
Black Strap Molasses	Hydraulic Oil	Soup
Catsup	Kerosene	Syrup
Caustic Soda Solution	Linseed Oil	Tar Oil
Cellulose	Lubricating Oil, all grades	Textile Oils and Compounds
Coal Tar	Molasses	Tomato Juice
Coolants	Mucilage	Varnishes
Cotton Seed Oil	Paint	Vegetable Oils
Dopes (with viscosities to 10 million S.S.U.)	Propane and Wax Slurry	Vegetable Juices
Finished Resin	Quenching Oils	Wax
Fuel Oils, all grades	Rayon Solution	Wood Tar
Glue	Road Tars	Wool Grease

When inquiring check CP 2920 on handy form, pgs. 2-3

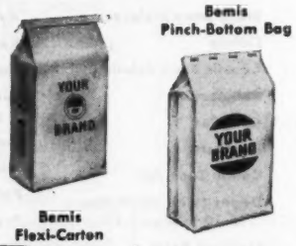
Put Your Product in the Shelf Package that says:

Bemis CONSUMER-SIZE Paper Bags

with the crispest, brightest printing your brand ever had

Your brand SINGS... it gets EXTRA selling power... when it's on a Bemis Consumer-size Paper Bag. No other bag-maker can beat—and few, if any, can equal—our high fidelity to detail and color. Ask your Bemis Man for the *complete* story.

One of these is the winner you need . . .



Bemis Pinch-Bottom Bag

Bemis Flexi-Carton

Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

When inquiring check CP 2921 on handy form, pgs. 2-3

Automatic case sealer in operation at Chas. Pfizer & Co. in Brooklyn

Chas. Pfizer Increases Production, Saves Labor with Case Sealer

Output with two men operating machine is twice that formerly obtained with four or five men, while a neater, more uniform package results

PROBLEM: At Chas. Pfizer & Co.'s Brooklyn plant, cardboard cartons of terramycin and other antibiotics were sealed by handgluing and stapling. This procedure was slow and required about four or five operators. Cost of the large number of staples consumed was not inconsiderable. In addition, the possibility of puncturing the contents existed with this method.

After sealing, the shipping address and other information were stenciled on the cartons by hand. One or two men were needed for this operation.

Solution: Approximately one year ago, the Model XSA Automatic Case Sealer, shown in accompanying photograph, was acquired and placed in operation.

An automatic stenciler was installed on the machine to take care of this part of the operation as the cases are sealed. The cartons are weighed as they come off the conveyor belt at the far end of unit, as illustrated in photograph.

Cases with the bottom flaps closed but unsealed are placed on the near end of the machine by an operator and automatically fed into the unit. The outer flaps are partially opened as the case rests on the declined rollers. An adhesive is simultaneously applied to the top and bottom inner flaps. The outer flaps are

automatically closed as the case enters the compression unit where it is held under even pressure by springloaded rollers until sealed.

Sealer is equipped with an automatic glue skip, ball bearing suspended shafts and rollers, motors, and electrical controls. It is adjustable to a wide range of case sizes. Glue is applied in thin film by rolls, which are ground and lapped.

Results: Rate of production with two men operating the case sealer is about twice that formerly obtained with four or five men. In addition, one or two men are saved on the stenciling operation.

Another advantage of the present equipment is the neater, more uniform package that results. Possibility of contents being punctured has been eliminated. Machine is considered to be easy to operate by the men handling it. Maintenance has been at a minimum.

(Automatic stenciler used in this installation is a product of American Marking Corp., Dept. CP, 379 Hillside Ave., Hillside, N. J.)

(Scale used in conjunction with Model XSA Automatic Case Sealer is a product of Fairbanks, Morse & Co., Dept. CP, 600 S. Michigan Ave., Chicago 5, Ill.)

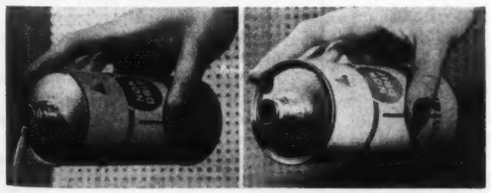
(The case sealer is a product of A-B-C Packaging Machine Corp., Dept. CP, P.O. Box 45, Quincy, Ill. . . . check CP 2922 on form, pages 2 and 3.)

"Metal bottle" has no seams, is tinless, and features a dripless pouring spout

Uses: For packaging all types of liquid products, whether they be "heavy pouring" or "thin pouring" — food or non-food.

Features: Container is round, tinless, seamless, and features a dripless pouring spout made possible by design of turned-in lip which forms mouth of nozzle and cuts off flow of liquid after pouring. Around-the-can lithography is permitted by absence of seam on container.

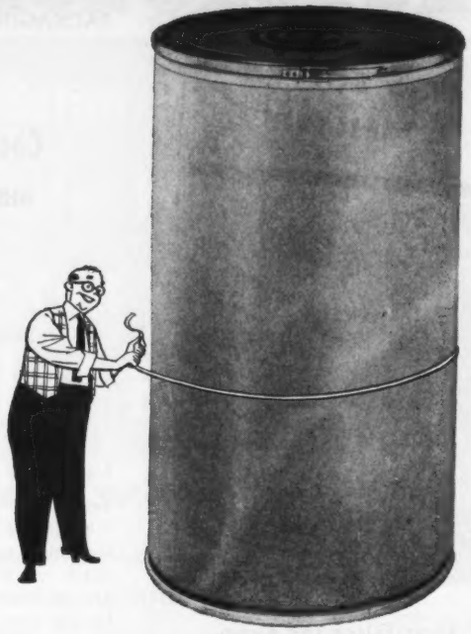
Description: Can is made of steel plate with tin coating eliminated. Traditional side seam



At left, liquid pours easily — and there is no drip or run when pouring is stopped at right

solder has been replaced by a strong-bonding thermoplastic cement. A plastic cap serves as closure for the container. "Metal bottles" are available in 12- and 22-oz sizes.

(Non-drip can is a product of American Can Co., Dept. CP, New York Central Bldg., New York, N. Y. . . . check CP 2923 on pgs. 2 & 3.)



★

IN PRODUCTION SOON

Continental's fifth fibre drum plant . . . at

PITTSBURG CALIFORNIA

★

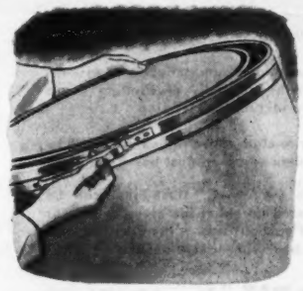
We tailor Leverpak drums to your measure

When you order Leverpak fibre drums for your bulk shipments, you get service that's hand-tailored for your individual needs. You have a choice of many sizes, 17 colors, any of 14 inks.

We make available as little or as much of our expert engineering facilities as you require. We do our level best to do things your way. Why not give us a call at any of the offices below.

LIGHT-STRONG. Leverpak fibre drums are ICC approved—can carry up to 40 times their own weight in dry chemicals, plastics, foods, machine parts, etc.

EASY TO FILL. Full open top makes Leverpak easy to fill, easy to empty. Metal chimes at top and bottom protect body in use, storage and shipment.



SURE LOCKING. The patented locking band grips the drum top securely, can't be dislodged in shipment, makes further sealing unnecessary. Yet it opens in a flash.

CONTINENTAL CAN COMPANY

FIBRE DRUM DIVISION
VAN WERT, OHIO

New York • Philadelphia • Pittsburgh • Tonawanda • Cleveland • Chicago
Atlanta • St. Louis • San Francisco • Los Angeles • Eau Claire

When inquiring check CP 2924 on handy form, pgs. 2-3

"OUR DUST PROBLEM WAS SOLVED BY DAY'S REVERSE JET FILTER"

". . . most of our dust is very fine and varies in size from 1 micron to 25 microns. The **DAY** "AC" (Reverse Jet) Dust Filter solved our problem . . ."

LAPP INSULATOR COMPANY
LE ROY, NEW YORK

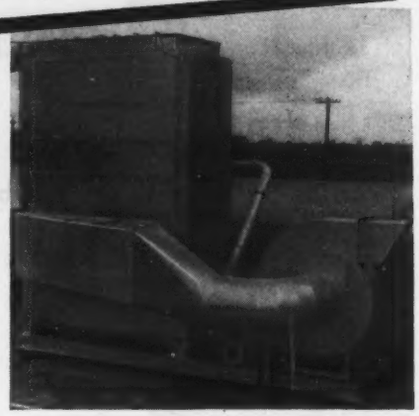


Photo of **DAY** "AC" Dust Filter installed by Lapp Insulator Company early in 1952.

Before installing their **DAY** "AC" Dust Filter the Lapp Insulator Company had tried several methods to handle the discharge of dust from their Turning Department, but as they advise . . . *"on our fine dust the other methods were only about 60 per cent efficient."*

HOW DAY'S REVERSE JET FILTER WORKS

1 **Continuous Reverse Jet Cleaning permits the use of *more efficient filter media* which gives filtering efficiencies up to 99.99+%.**

2 **Constant air volumes maintained because of continuous cleaning action.**

3 **Continuous, automatic operation without the necessity of shutting down any section for cleaning.**

4 **Air-to-cloth ratios to as high as 25 to 1, depending on dust being handled.**

5 **The DAY "AC" Dust Filter can be placed on either the pressure side or the vacuum side of the dust fan. Furnished with or without housing.**

Square to round inlet eliminates ledges and corners.
Separate centrifugal blower supplies a constant volume of high pressure air for the Reverse Jet to provide cleaning action.
Pressed wool felt filter tube assures maximum filtering efficiency.
Reverse Air Jet ring travels up and down tube continuously. High pressure air blows dust from inside of cloth.
Continuous screw conveyor (Air Lock Type) discharge shown. Hoppers, rotary valves, etc., can be provided where necessary.

The **DAY** "AC", reverse jet, Dust Filter will give you many advantages—if you want to recover product or dispose of dust. Our Bulletin Number 528 contains new information on dust control. Write for it today.

Licensed by H. J. Hersey, Jr.

The **DAY** *Company*
852 Third Ave. N. E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 70Y, Ft. William, Ontario
Branch Plants: Buffalo, Fort Worth, Welland, Ontario

DAY SINCE 1881 **DUST CONTROL**
A SINGLE UNIT OR A COMPLETE SYSTEM

When inquiring check CP 2925 on handy form, pgs. 2-3

Costs cut by box stitching method which can utilize lighter gage wire

Stronger stitches from lighter wire save 24% per coil

Uses: For stitching fiberboard cartons.

Features: Stitching method takes regular flat stitching wire, puts an arc into it prior to stitch-forming operation, then drives and clinches stitch at higher speeds. Arcuate wire stitches are said to be stronger, lighter, and practically buckle free. Also, because each pound of wire now produces many more stitches, wire costs are lowered considerably.

Key to higher strength of arcuate stitches is their arc or bow-like cross-section

Arc shape of wire gives stitches greater column strengths. Because of this, arcuate stitches can be made of lighter gage wire. A saving in wire results. Each coil will produce a greater number of stitches. For example, by using .103 x .014" wire instead of .103 x .020" wire, a coil of the same weight will produce 42% more stitches. Translated into dollars, this amounts to a 24% cost saving per coil.

Description: Method permits driving of several stitches on top of one another without jamming machine. Because arcuate stitches have higher crown and leg strengths, there is less chance for legs to shear and jam machine.

Operating periods are lengthened because a spool or coil of wire goes further. When coils of .014" flat wire replace .020" wire, time-consuming stops for changing coils are said to be cut almost in half. Machine down time is considerably reduced because stitches are stronger, there is less wear on machine parts, and there is less chance of damage to machine if stitches are driven when there is no board between clincher and driving mechanism.

Arcuate stitching reduces the possibility of box liner puncture. Because arcuate stitches clinch properly with less compression, formers need not be driven as far down.

Test results indicate that these stitches are equivalent in holding strength to ordinary flat wire

For Laboratory Testing and Pilot Plant Runs — Compact, Efficient SIFTER

Here's a compact, practical unit for pilot plant and experimental work. The all-metal Gump Laboratory Sifter gives *big* capacity for its size. Heavy-duty drive base imparts a uniform rotary motion on a true level plane, to every inch of sieve surface. All parts are readily accessible for easy cleaning.

With Carrier Platform for Flask Agitators

The same drive unit does an excellent job on flask agitation and aeration of control samples in chemical analysis. Flask carrier platform can be easily and quickly interchanged with Sifter box, for the laboratory that wants *both* operations. Available with both Sifter box and flask platform, or with either one—and in several sizes. *Write for details and recommendations on your specific problems.*

B. F. GUMP CO.,
1344 So. Cicero Ave., Chicago 50, Ill.

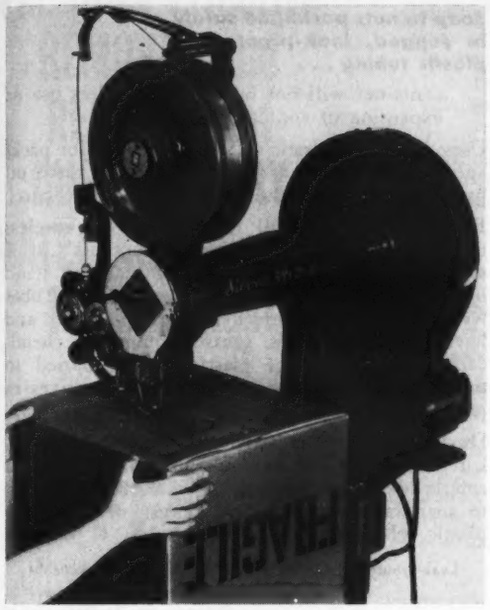
Gentlemen: Please send me descriptive literature and complete information on the GUMP-Built Equipment indicated below:

- ☐ GUMP Laboratory Sifter and Flask Agitator.
- ☐ DRAVER FEEDERS—accurate volume percentage feeding.
- ☐ DRAVER Continuous Mixing Systems —accurate, efficient mixing.
- ☐ VIBROX PACKERS—pack dry materials in bags, drums, barrels.
- ☐ NET WEIGHERS—automatic weights range from 3 oz. to 75 lbs.

B. F. Gump Co.
Engineers and Manufacturers Since 1872

Gump 1344 SOUTH CICERO AVE. CHICAGO 50, ILLINOIS

When inquiring check CP 2926 on handy form, pgs. 2-3



Stitches are stronger, lighter, and virtually immune to buckling

stitches of .006" heavier gage. Tests were made with heaviest types of corrugated and solid fiberboard. Tests were run to failure. In every test — drum, drop, or compression — stitches are said to have far surpassed accepted standards for holding strength. In tests made on lighter types of fiber-board, stitches often held until box was no longer usable.

(Arcuate stitching method is a development of Acme Steel Co., Dept. CP, 2840 Archer Ave., Chicago 8, Ill. . . . or for more information check CP 2927 on handy form, pages 2 and 3.)

Increase in number of sizes and types of polyethylene drum liners announced

An increase in the number of stock sizes and types of polyethylene drum liners has been announced by company. Formerly only nine types were available. Now, some 51 different types are included in a wide variety of sizes, film gages, and methods of closure.

Greatest number of new sizes is in the new type circular bottom drum liner. They are now made in 5, 15, 30, 50, and 55 gallon sizes. Each gallonage is produced in three different types, varying with method of closure. The 5, 15, and 30 gallon sizes are made in two different film gages. The 50 and 55 gallon sizes are available in three different film gages. Flat polyethylene drum liners are now being produced in 15 different types.

(Products of Mehl Mfg. Co., division of Sydney-Thomas Corp., Dept. CP, 2057 Reading Rd., Cincinnati, Ohio . . . check CP 2928, pgs. 2 & 3.)

Get Better Protection, Faster Packaging at Lower Cost With This Model ET Bagpaker®

CLOSES OPEN-MOUTH, MULTIWALL PAPER BAGS SEMI-AUTOMATICALLY . . . TAPES AND SEWS 15 BAGS A MINUTE . . . TEAMS UP WITH YOUR EXISTING FILLING AND WEIGHING EQUIPMENT TO INCREASE PACKAGING EFFICIENCY

You don't have to scrap your present equipment to get *stronger*, more *economical* bag closures with this Model ET Bagpaker. One man—receiving bags from your existing weighing and filling set-up—applies creped "*kraft*" sealing tape over the bag end . . . sews a reinforced "cushion stitch" through both tape and bag . . . and neatly trims tape . . . time 4 seconds or less. Dimensional drawings and detail information are available in Booklet ET-E-12 Write for your copy *today*. Bagpak Division, International Paper Company, 220 East 42nd St., New York 17, N. Y.

Model ET applies famous "Cushion-Stitch" over dry tape for sift-proof closure. Model E-1 applies "Cushion-Stitch" only, for use where sift-proofing is not essential.

Check These Model ET Bagpaker Advantages

- ★ 15 bags per minute with one operator when filled bags are continuously delivered to conveyor.
- ★ Quickly adjustable for bags of from 25 to 100 lb. capacity.
- ★ Completely portable. Mounted on casters, can be moved easily to various packaging stations.
- ★ Bag starts and stops sewing head when equipped with automatic sewing head control.
- ★ Hoepner No. 150 Heavy Duty sewing unit with automatic brake to prevent "coasting".

International Paper COMPANY

BAGPAK DIVISION

BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Detroit • Kansas City, Kansas • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco • IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

When inquiring check CP 2929 on handy form, pgs. 2-3

If you have a labeling problem ordinary labels can't solve...use

AVERY Kum Kleen self-adhesive LABELS

...the tough ones are our specialty

...where other types of labels are found "wanting"...or when you need to substitute an attractive pressure-sensitive label for a costly nameplate... Avery Kum-Kleen labels are the *best* solution to your problem!

...and so are the other kind..

...where you want *faster* labeling... improved appearance...labels that won't pop, curl or peel...or those the housewife can remove without soaking or scraping...there's no substitute for an Avery Kum-Kleen label!

faster • easier • more economical

Patented Avery dispensers...manual or electric... feed die-cut *pressure-sensitive* labels off roller tape, ready to be LAID ON any clean, smooth surface. No moistening...no sticky fingers. Where can YOU use these labels in YOUR business? Write today for free samples, case histories and prices.

AVERY ADHESIVE LABEL CORP., DIV. 123
117 Liberty Street, New York 6 • 608 South Dearborn Street, Chicago 5
1616 So. California Ave., Monrovia, Cal. • Offices in Other Principal Cities
Originators of Pressure-Sensitive Labels

When inquiring check CP 2930 on handy form, pgs. 2-3

Investigate the 1953
BLACK DIAMOND AUTOMATIC
valve bag packer

Designed to pack dry granular or powdered free-flowing materials
★
Push-button control
Moderately priced
Easy to install
Lowest maintenance costs
Performance guaranteed
★

FOR FURTHER INFORMATION WRITE TO BLACK PRODUCTS COMPANY
13513 S. CALUMET AVE. • CHICAGO 27, ILL.
MANUFACTURERS SINCE 1912

When inquiring check CP 2931 on handy form, pgs. 2-3

RICHARDSON
. . . helps make money from Chows for
RALSTON PURINA

PROBLEM: ✓

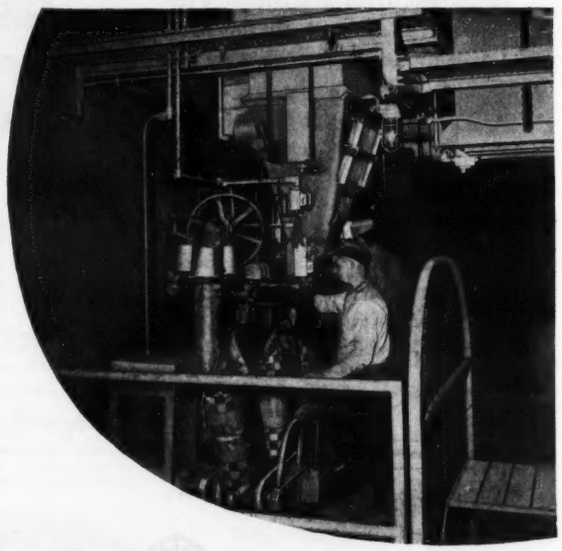
Weighing up to 60,000 pounds of laying Chows per hour and bagging it in 50-lb. bags ACCURATE BY WEIGHT.

SOLUTION: ✓

Installation of one Richardson E-50 Duplex Bagging Scale. This versatile unit operates with two weigh hoppers . . . one loads while the other discharges. Speed—18 to 20 50-lb. bags per minute with consistently high accuracy.

Ralston Purina Company, Bloomington, Illinois, one of the nation's leading processors of feedstuffs, does a high-volume business in cattle, hog, and poultry Chows. And to insure *fast, accurate* production, they consulted a Richardson engineer. He made a thorough production survey and recommended this installation—a labor-saving, cost-reducing Richardson E-50 Duplex Bagging Scale that guarantees *high volume* with *consistently accurate weight.*

Richardson has made a specialty of engineered materials handling by weight for more than fifty years. This practical experience in solving bagging, mixing, proportioning, and automatic weighing problems for every field of processing is available to you.



Call in a Richardson engineer, and at no obligation to you he'll gladly make a survey of your present operations. His suggestions can point the way to more consistently profitable operation.

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

Richardson Scale Co., Clifton, New Jersey. Feeder-Weigher Systems of All Types: Automatic Bulk-Weighing Hopper Scales, Including Conveyor-Feed Types • Continuous Feeder-Weighers • Automatic Bagging Scales • Bag Sewing Conveyors • Packers • Process Control Panels. *Branch offices in:* Atlanta • Buffalo • Boston • Chicago • Detroit • Houston • Minneapolis • New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal • Toronto.

When inquiring check CP 2932 on handy form, pgs. 2-3

Soap to nuts packaged safely in rugged, leak-proof plastic tubing . . .

container will not burst from careless use or expansion of contents

Uses: Vinyl plastic collapsible tube is for packaging such products as liquid soap, tooth paste, oil paints, pharmaceuticals, and small machine parts.

Features: Tube will not burst from careless treatment or from expansion of contents. It is said to be so strong that a 200 lb man can stand on it without rupturing the sides or seams. Tubes weigh about 1/3 as much as lead containers and have resistance to oils, greases, and many chemicals. Composition of plastic can be varied to provide maximum resistance to any corrosives in packaged product.

Description: Material lends itself to filling on a regular tubing-filling machine equipped with a simple adapter to heat-seal the bottom. According to manufacturer, other advantages of the vinyl plastic tubes are:

Leak-proofness:	Hold liquids better than conventional tubes because containers are hermetically sealed at both ends
Ruggedness:	Vinyl plastic tubes can withstand impact and rough handling in shipping
Product Visibility:	Tubes can be supplied either transparent or opaque
Unlimited Colors:	Containers can be supplied in any color and can be printed up to four colors
Long Storage Life:	Tubes will not deteriorate in storage — will not oxidize or rust
Low Temp Flexibility:	Special formulations of plastic enable flexibility to be maintained as low as -65° F
Hot Filling Possible:	Containers stand up to 250° F before softening
Non-toxic:	Plastic tubes will not impart taste to product
Sterilization:	Containers can be boiled in water for sterilization if necessary
Less Packaging:	Ruggedness of tube eliminates necessity for secondary packages

(Collapsible tube developed by Wallace Container Co. of Los Angeles, Calif., uses as base material Geon vinyl resin, a product of B. F. Goodrich Chemical Co., Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio . . . or for more information check CP 2933 on handy form, pages 2 and 3.)

Guides use of PE drum liners

Information kit tells how to use polyethylene drum liners, including the circular-bottom and flat types. Step-by-step photos reveal how to fill

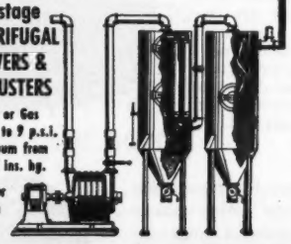
For 100% Effective REMOVAL and RECOVERY of DUST and DRY MATERIALS anywhere in your plant

HOFFMAN
Industrial Pneumatic Cleaning Systems

Permanently piped, stationary systems that pick up where present collectors leave off! On process operations or plant cleaning, Hoffman-designed systems provide big capacity for central collection of dust from several areas at same time. Sizes from 3 to 100 H.P., or larger to your requirements. Engineering survey, without obligation. Write for technical Bulletin A-939.

HOFFMAN ALSO BUILDS

- HEAVY-DUTY INDUSTRIAL PORTABLE VACUUM CLEANERS
  4 Sizes — Write for Bulletins
- Multistage CENTRIFUGAL BLOWERS & EXHAUSTERS
  For Air or Gas from 1 to 9 p.s.i. or Vacuum from 2 to 12 ins. hg.
  Write for Bulletin A-932



Air Appliance Division
U. S. HOFFMAN MACHINERY CORP.
113 FOURTH AVE., NEW YORK 3, N. Y.

When inquiring check CP 2934 on handy form, pgs. 2-3

the liners with various types of material, wet and dry. Methods of closure are detailed. Technical information on polyethylene properties is included. Kit also contains a miniature sample of the circular-bottom liner.

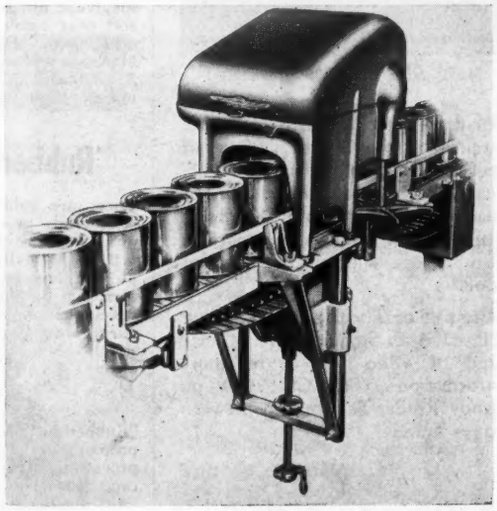
Drum liner kit is supplied by Mehl Mfg. Co., division of Sydney-Thomas Corporation, Dept. CP, 2057 Reading Rd., Cincinnati 2, Ohio. When inquiring specify CP 2935 on handy form, pages 2 and 3.

Metal-top glass containers, cans mark themselves in processing operation . . .

marker operated by movement of containers along conveyor line

Uses: For marking metal-top glass containers and cans.

Features: Marker requires no outside power to operate. It is operated by the movement of containers along the conveyor line. Containers moving



Speed of containers on line determines speed of marking by machine

on the line rotate a pair of star wheels which in turn actuate stamping wheel so that containers actually mark themselves. Speed of marking is determined only by the speed of containers moving along the line.

Description: Two models are offered, both adjustable to conveyor widths and container sizes. Model 400 handles containers 2 to 8 inches high, 1¾ to 3¾ inches in diameter. Model 600 handles containers 2¼ to 12 inches high, 3-1/16 to 7½ inches in diameter.

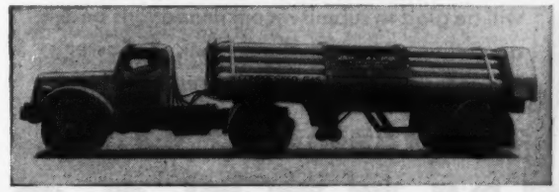
(Bruceway Marker is exclusively manufactured and distributed by Barry-Wehmiller Machinery Co., Dept. CP, 4660 W. Florissant Ave., St. Louis 15, Mo. . . . or for more information check CP 2936 on handy form, pages 2 and 3.)

prefer TAYLOR-WHARTON GAS TRANSPORTS

Why?—Because there's no rolling, lifting or sliding heavy cylinders when high pressure gases are delivered the Taylor-Wharton way.

In fact, there's no exchange problem at all. The first to appreciate this are customers, shipping and receiving personnel and drivers. Each T-W Gas Transport replaces 200-400 conventional high pressure cylinders, and can be delivered as a unit to remain right at the user's plant. When exhausted, the transport is returned to producing point for re-load.

Rugged design, careful workmanship plus our vast experience in producing seamless steel gas cylinders combine to make Taylor-Wharton Gas Transports the safest possible. Gross weight is 28,000 lbs., including 30 tubes mounted on single axle with 2-speed landing gear and air brakes. Write for details.



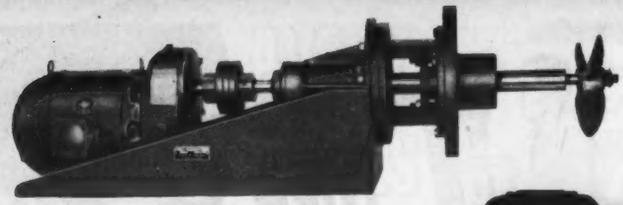
Units now in use carrying:

- Oxygen
- Nitrogen
- Helium
- Boron Trifluoride
- Hydrogen

TAYLOR-WHARTON GAS TRANSPORTS a product of
THE TAYLOR-WHARTON IRON & STEEL CO.
CINCINNATI 12, OHIO

Also Manufacturers of: Manganese Steel Castings, Alloy and Carbon Steel Castings, Special Trackwork, Gas Cylinders.

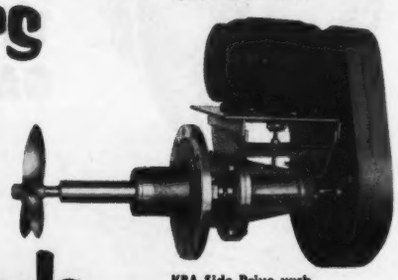
When inquiring check CP 2937 on handy form, pgs. 2-3



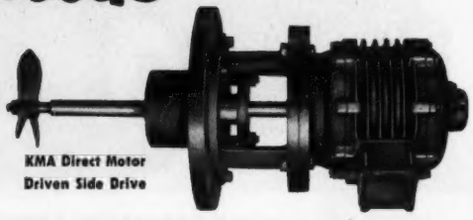
KBA Gearmotor Driven Side Drive

KBA Side Drive with special motor mount

Side Drive Agitators to Suit your Needs



KBA Side Drive with standard V-belt drive



KMA Direct Motor Driven Side Drive

DON'T COMPROMISE on agitation. Come to Nettco for the *engineered* side drive agitator that's right for your own particular requirements. Each Nettco agitator is built of standard components — combined for maximum mixing efficiency, optimum power utilization, and designed to conform to available space.

For side drive agitation at its best, check with Nettco. We will be glad to submit recommendations and quotations. New England Tank & Tower Company, 93 Tileston St., Everett 49, Mass.

SEND FOR CATALOG 530

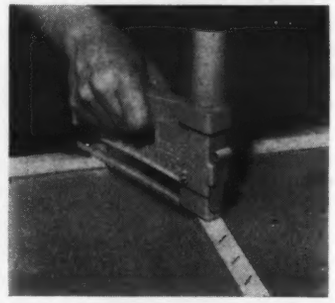
NETTCO

Foremost in ENGINEERED AGITATION for over half a century

When inquiring check CP 2938 on handy form, pgs. 2-3

More than 200 staples per minute driven by unit . . .

balanced for easy handling More than 200 staples per minute can be driven by unit with bumper-type trip drive. Bumper trip design distributes 40 to 80-lb air pressures evenly for rapid dependable driving. Unit is balanced for ease of handling. Fatigue factor is said to be reduced to a minimum.



Stapler in operation

Air-driven tacker loads a double bar of staples in a variety of metals and finishes, from 5/32" to 13/16" long. Unit can be loaded quickly through the front. Spring lock gives the operator easy access without the use of tools.

(Product of The Heller Co., Dept. CP, 2153 E. Superior Ave., Cleveland 14, Ohio . . . or for more information check CP 2939 on handy Reader Service slip between pages 2 and 3.)

Vial stoppering machine features simple construction

Uses: As a high-speed, automatic vial stoppering machine.

Features: Simplicity of construction and a minimum of work-especially to minimize time reing parts. Machine is designed quired to assemble and disassemble for cleaning and sterilization.

Description: Capable of inserting over 150 rubber or polyethylene stoppers per minute, machine incorporates a variable speed mechanism that enables it to match production line rates automatically. Unit can be adjusted quickly to handle different

Two Ways To Provide Long-Life Insurance for Your Plant and Equipment . . .

In the Coatings and Linings briefly described below, GOODALL offers two proven methods of assuring prolonged service life for metal products, parts and equipment, by protecting them from the deteriorating effects of corrosion, abrasion and weather.

"Allgood" Maintenance Coatings

The ideal way to protect the plant and its equipment from the effects of weather, corrosion and other destructive agents. With no greater time or effort than required to apply ordinary paint, "Allgood" Maintenance Coatings can be brushed or sprayed-on to give a tough, durable covering that will pay for itself over and over again through savings in maintenance and replacement costs. Equally effective on metal, wood and concrete. Made in several different formulas to meet specific conditions. Available in quart and gallon cans from headquarters at Trenton, N. J., or any of our branches listed below.

"Rubberhide" Linings

These are rubber, neoprene or other compounds processed to the inner or outer surfaces of metal parts and products, of virtually any size or shape, to provide long-lasting protection against corrosion and abrasion, or to prevent contamination of many costly solutions during manufacture, storage or distribution.

"Rubberhide" Linings are applied promptly to units shipped to our processing plants in Trenton, Chicago and Houston. Where the units are too large for practical or economical shipment, or are permanently installed, the Linings are applied by trained field crews. We can also furnish pipe, fittings and valves; tanks, fume ducts and other fabricated equipment with "Rubberhide" Linings applied.

Contact our nearest branch for complete information on "Allgood" Maintenance Coatings and "Rubberhide" Linings; or submit details of the equipment to be protected, for our recommendations.

PARTICIPATING IN THE MANUFACTURE AND MARKETING OF KENTUCKY SYNTHETIC RUBBER CORPORATION

GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

Est. 1870

When inquiring check CP 2940 on handy form, pgs. 2-3

AUGER-MATIC

FILLS and WEIGHS
VALVE BAGS
CUTS PACKING COSTS

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste . a time and labor saver. Packer can easily be moved from one filling point to another

Send for descriptive literature.

E. D. CODDINGTON MFG. CO.
5036 NORTH 37TH STREET • MILWAUKEE 9, WISCONSIN

When inquiring check CP 2941 on handy form, pgs. 2-3

all new! | THROUGH AND THROUGH

NEW DESIGN

Stainless Steel Meter

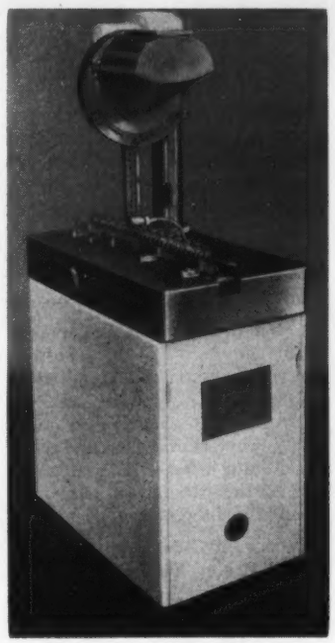
ACCURATELY MEASURES LIQUIDS FOR FOODS, PHARMACEUTICALS, CHEMICALS AND CORROSIVE LIQUORS

Rockwell Rotocycle Stainless Steel Industrial Meter, Type 2BC

Now you can have positive metered accounting for corrosive liquids that previously could not be handled by ordinary meters. Type 2BC Rockwell Rotocycles are made of stainless steel, inside and out. They are lasting, accurate, easy to clean. Install them with certainty for batch mixing formulas, for inventory control, for cost and tax record accounting. Quantity Control Registers and Remote Registration Systems are available. Described in bulletin OG-403. *Write Rockwell Mfg. Co. Dept. A-4, Pittsburgh 8, Pa.*

You Can RELY ON ROCKWELL INDUSTRIAL METERS

When inquiring check CP 2942 on handy form, pgs. 2-3



Unit has a minimum number of working parts

size vials by means of two simple handwheel controls. It occupies floor space of 32 x 18", and has an overall height of 60".

(Product of Perry Metal Products Co., Inc., Dept, CP, 1127 Atlantic Ave., Brooklyn 16, N. Y. . . . or for more information check CP 2943 on handy form, pages 2 and 3.)

Packing product protects bottled chemicals

Four-page bulletin describes an interior packaging product used to wrap and cushion bottled chemicals during shipment and storage. Product is white, clean, soft, flexible, and conformable. It has uniform density and thickness and provides highly absorbent cushioning.

Bulletin covers specifications as well as giving directions on applications and uses of material. Product complies with Parcel Post regulations governing liquid shipments.

Bul KKB-9 on Kimpak is issued by Kimberly-Clark Corp., Dept. CP, 4500 N. Commercial St., Neenah, Wis. When inquiring specify CP 2944 on handy form, pages 2 and 3.

Put A Gaylord Man On Your Team... It Pays Off In Reduced Packing Costs

One manufacturer is saving 75% in packing costs and 55% in container weight with his new Gaylord-designed "package."*

Your savings may not be as great . . . but a Gaylord man, working with management, design, production and purchasing, is almost certain to come up with cost-cutting suggestions for tough packing problems.

Look in the classified pages of your phone book under "Boxes (Gaylord)" for the Sales Office nearest you.

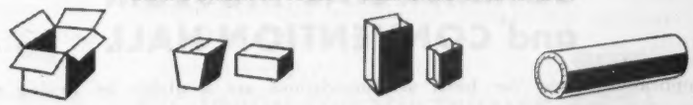
**Name and address on request.*

Gaylord Boxes

Their seen and unseen quality gives you an extra margin of safety.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • Sales Offices Coast-to-Coast



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

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New Ideas Methods Processes Materials
Equipment Techniques Developments

Chemists and chemical engineers will find an unequalled opportunity to get first hand information from the men and companies who have contributed to the advances in the fast moving chemical industries. Years of chemical processing knowledge will be conveniently assembled under one roof in this greatly enlarged exposition. The progressive exhibitors represented will have technically staffed displays designed to make this exposition more informative than ever.

Nowhère can you get so much valuable information on the latest developments in the chemical processing industries, in so short a time and so vividly. PLAN NOW TO ATTEND.

24TH EXPOSITION OF CHEMICAL INDUSTRIES
ESTABLISHED 1915

NOV. 30 to DEC. 5

COMMERCIAL MUSEUM and CONVENTION HALL

Application forms for hotel accommodations are available by writing to INTERNATIONAL EXPOSITION COMPANY, 480 LEXINGTON AVE., NEW YORK 17, N. Y.

When inquiring check CP 2945 on handy form, pgs. 2-3

PACKAGING

Seam of tinless can gives more protection against corrosion

Additional protection against corrosion and oxidation is provided by the cemented side seam of the tinless motor oil can recently introduced. Design of the can eliminates the soldered side seam composed of an alloy of tin and lead. Thermoplastic cemented side seam used in its place establishes a strong bond between layers of metal.

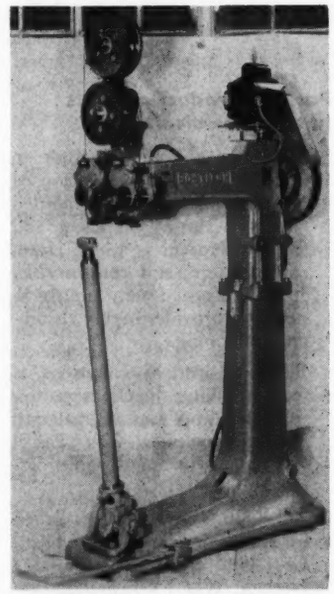
Another advantage of the container is its completely tin-free construction. This insures that any shortage of strategic tin supplies will not interrupt the steady flow of metal cans. Also, elimination of the exposed seam increases the attractiveness of the package by permitting around-can lithography.

(Product of American Can Co., Dept. CP, New York Central Bldg., New York, N. Y. . . . or for more information check CP 2946 on handy form, pages 2 and 3.)

Unit drives two staples at once 250 times per minute

Uses: For continuous high speed stapling of large corrugated and solid fiber cartons.

Features: Stitcher drives and clinches two staples 2½" apart



Speedily and securely staples cartons up to four feet wide

Quality Fabrics —FOR THE *Chemical* INDUSTRY
"The Preferred Source of Supply"

"SAN JUAN"® Cotton Duck
NUMBERED DUCK
IN ALL WIDTHS AND WEIGHTS

Filter Twills • Chain Cloths
Press Cloths • Enameling Duck
Selected Osnaburgs

Our technicians will gladly aid in creating industrial fabrics to your specification. We solicit your inquiries.

B. J. BARRY & CO.
INCORPORATED
62 WORTH STREET • NEW YORK 13
AKRON • BOSTON • LOS ANGELES • NEW ORLEANS
MILLS AT: Lincolnton, N. C. and Roanoke, Ala.

When inquiring check CP 2947 on handy form, pgs. 2-3

Do you use them?
Could you use them?

STAINLESS STEEL CYLINDERS

Thin gauges our specialty

- **Diameters** ..... 1½" to 24"
- **Lengths** ..... 2" to 24"
- **Walls** ..... .018" to .109"
- **Perfect edges**
- **Plain or Perforated**
- **Polished or Unpolished**
- **Economical quantity production**

Ideal wherever sanitation or corrosion resistance are needed. Fabricated to close tolerances with welds visible or invisible. Secondary operations available—rolling grooves, flanging ends or attaching bottoms.

Tell us your needs for recommendation and quotation.

METALSMITHS
Div. of Orange Roller Bearing Co., Inc.
556 White St., Orange, N. J.

When inquiring check CP 2948 on handy form, pgs. 2-3

with each stroke and has rated speed of 250 strokes per minute.

Description: Throat depth of 25" makes it possible to securely staple containers up to four feet wide with the heavy duty duplex-head box stitcher. It is available in three models to suit the particular needs of the user.

Model JGU — with bottoming post for closing carton bottoms.

Model JU — an arm stitcher for making up large cartons.

Model JGUH — a combination arm and bottom stitcher, for use in plants where there is a large volume of both types of carton stapling.

(Product of Bostitch, Dept. CP, 1009 Mechanic St., Westerly, R.I. . . . check CP 2949 on handy form, pages 2 and 3.)

Covers constant-weight continuous feeder

Manufacturer's constant-weight continuous feeder is pictured and described in recently issued bulletin. The belt feeder delivers a selected amount of product per minute to processing equipment in an uninterrupted flow. Typical products handled include dry and free-flowing chemicals and limestone.

Bulletin lists specifications for the two models available — the 9" and the 18" (stream width) sizes. It describes the automatic regulating gate, special inlet opening, instruments, electrical equipment, and other parts and accessories.

Table lists the maximum capacities of the two models at various drive ratios and belt speeds. Photographs illustrate the drive mechanism, the scraper at the end of the feeder, and the weigh beam shown attached to the weighing rollers beneath the feed belt.

(Bul 5202 is issued by Richardson Scale Co., Dept. CP, Clifton, N. J. When inquiring specify CP 2950 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2951 . . . see information request blank between pages 2-3.

How do you measure the look in a puppy's eye?

The preliminary precautions have been taken. A well-recommended kennel. A healthy litter. A breed that takes well to youngsters.

Now it's up to the boy to choose.

How will he decide? Perhaps by the look in a puppy's eye.

Chances are, you'll be buying Multiwalls soon again. You've done as every good buyer does. You've considered the reputation of the various suppliers. You've investigated the quality of their product. You've set down your specifications to the last fraction.

Now you pause to think again of the fellow who will make the final choice—your customer. How will he decide? One consideration may well be "the look in a puppy's eye." To say it another way, the sales appeal of your package.

Men who know Multiwalls . . . who buy more than 85 per cent of all Multiwalls made . . . give great weight* to good printing and design.

Union's art directors have concentrated experience. They know how to give your Multiwall package the look it needs to stand out among competition. Volume purchasers of Multiwalls recognize this. They are calling on Union for a greater share of their Multiwall needs.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

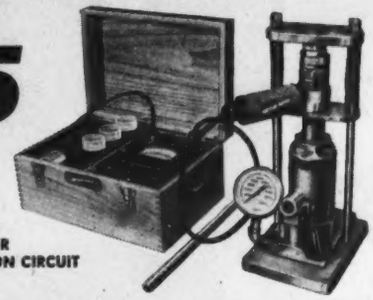
*August, 1951 research study.

UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7

A 1 MINUTE MOISTURE CHECK

INSURES QUALITY OF PRODUCT
WHEN YOU USE THE
NEW MOISTURE REGISTER

G5



EXCLUSIVE
R. F. POWER
ABSORPTION CIRCUIT

PROVED IN THE FIELD ON

SUGARS
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ELECTRONIC MOISTURE REGISTER

Moisture Register testing equipment is the standard in moisture testing for all industries.

1510 W. Chestnut St., Alhambra, California, Dept. CP

Please send me complete information on MODEL G5 MOISTURE REGISTER. I want to test_____ (MATERIAL)

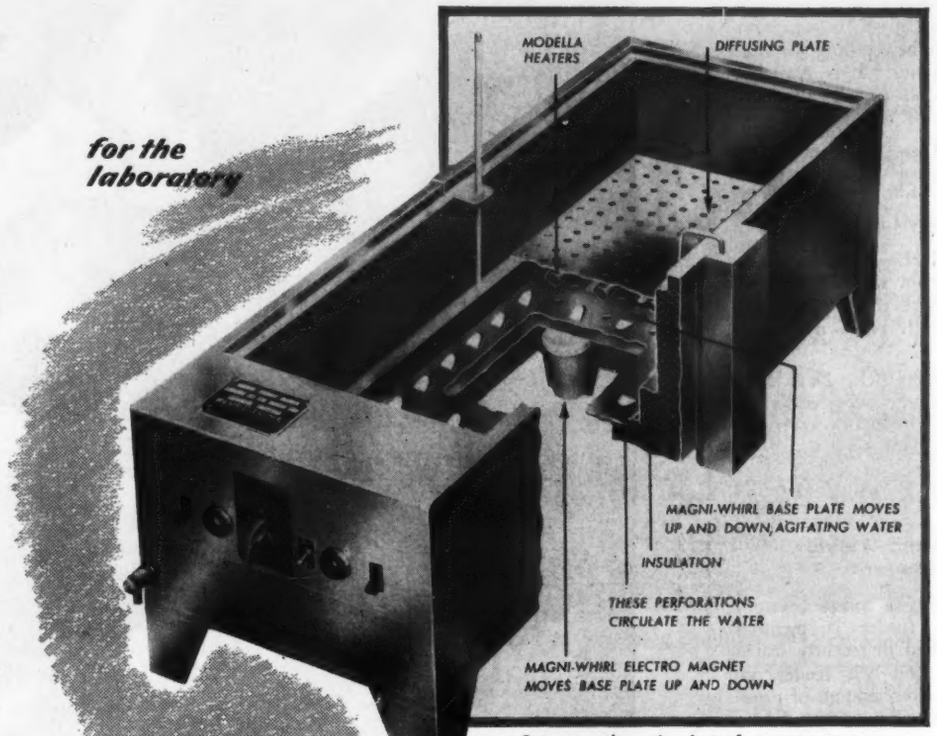
NAME_____ TITLE_____

COMPANY_____ ADDRESS_____

CITY_____ STATE_____

When inquiring check CP 2952 on handy form, pgs. 2-3

for the laboratory


MODELLA HEATERS
DIFFUSING PLATE
MAGNI-WHIRL BASE PLATE MOVES UP AND DOWN, AGITATING WATER
INSULATION
THESE PERFORATIONS CIRCULATE THE WATER
MAGNI-WHIRL ELECTRO MAGNET MOVES BASE PLATE UP AND DOWN

Cutaway schematic view of constant temperature bath shows features of construction. Perforated base plate and diffusing plate provide uniform, gentle, automatic agitation of the bath liquid to maintain uniform temperatures throughout the bath

Versatile constant temperature bath eliminates need for any stirrers or circulating systems

Design of unit leaves 100% of working area available

INCORPORATING a built-in, automatic stirring and circulating system, the Blue M Magni-Whirl Utility Bath provides complete, gentle agitation in all areas of the liquid mass irrespective of how heavily the bath is loaded with test specimens. Elimination of accessory stirring and circulating equipment leaves 100% of the working area in a usable condition at all times.

Efficient agitation is provided by an automatic, self-timing electromagnet located below the bottom wall of the bath. This device periodically pulls a perforated plate through a downward movement of ¼" and allows it to return to its original position.

Multi-perforations in the plate provide pumping and circulating action throughout the entire liquid mass of the bath liquid. Electromagnet is energized and de-energized through twenty-ampere, mercury tube switch.

Bath units are available in 4 models which have working space dimensions ranging in length from 12 to 36", in width from 7½ to 18", and in depth from 7½ to 9½". All units have a temperature range from ambient to 100°C; can be used at higher temperatures with a suitable bath liquid. A laboratory-type thermometer is included — 12" in length and calibrated from 10 to 110°C in 1°C steps. Construction is of the double-wall type with the water chamber and outer jacket constructed of polished stainless steel with a No. 4 finish. All edges are hemmed and all joints are tight and leakproof.

Water chamber is blanketed with 1" blocks of Asbestocel which is moistureproof and will not settle. Heat conductivity is reported to be less than 0.27.

All baths of this design are equipped with a hydraulic-type automatic temperature control with dual micro switch contacts — totally enclosed — UL approved. This arrangement permits operator to select any two temperatures most frequently used and to repeat these with a maximum of convenience.

Built-in automatic stirrer and circulating system automatically maintain temperatures from ambient to 100°C throughout the entire water mass to within plus or minus ¼°C. All baths have two large 1" pilot lights — red to denote when bath is in use and green to show when Modella heating elements are energized.

Constructed according to Army-Navy specifications with tubular full-length elements, heaters consist of threaded brass fitting which is silver-soldered to a brass tube. This is screwed into bath to form a watertight fit and permit simple mechanical replacements. Bright nickel plated elements extend full length of bath for proper heat distribution.

A power selector switch automatically permits proper selection of proper wattage in relation to desired temperatures. This device permits increased efficiency of temperature stabilization plus power cost savings.

(Bath is designed and manufactured by Blue M Electric Co., Dept. CP, 306-308 W. 69th St., Chicago 21, Ill. . . . check CP 2953 on form, pages 2 & 3.)

Handy catalog lists items for chemical control

Comprehensive catalog contains separate section designed as a handy guide for selecting pH equipment. Information given aids in determining which of manufacturer's products are suitable for a variety of conditions under which pH is to be determined. Extensive line of solutions and apparatus for use in these determinations is outlined in subsequent descripitions.

In addition to this equipment, catalog also deals with reagents and apparatus for chlorine control, soil testing and vitamin studies; items for analysis of electroplating baths as well as for the analysis of water, sewage and industrial wastes are also described.

"Chemical Control," 15th ed, is issued by LaMotte Chemical Products Co., Dept. CP, Towson, Baltimore 4, Md. When inquiring specify CP 2954 on handy form, pages 2 and 3.

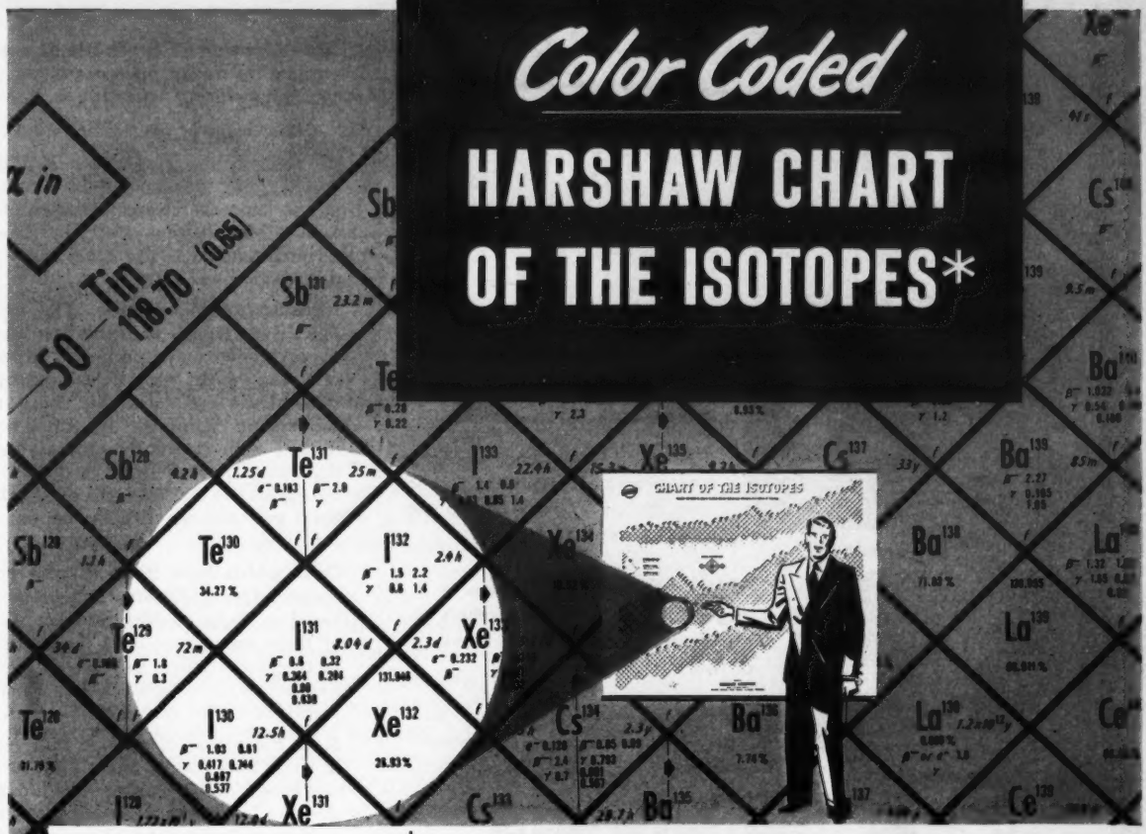


Chart Features

Element Name
Atomic Number
Atomic Weight, 1952 Revision
Atomic Mass Data
Thermal Neutron Cross Section
Element Symbol
Stable Isotopes Color Coded in Blue
Naturally Radioactive Isotopes Color Coded in Green
Artificially Radioactive Isotopes Coded by Half-life in 6 Colors
Radioisotope half-life
Modes of Radioactive Decay
Radiation Energies in Million electron volts
Isomeric States
Isomeric Transitions
Nuclear Transmutation Code
Percentage Abundance of Naturally Occurring Isotopes
Fission Data (thermal fission of U^{235})
Lithographed in 8 Colors Plus Black and Gray
Corrected to February 1, 1953

Compiled and Edited by
JOHN R. BRADFORD, Ph. D.
Director Radioisotopes Laboratory,
Case Institute of Technology

*International copyright

8 Code Colors Identify Isotopes and Half Lives

The Harshaw CHART OF THE ISOTOPES is arranged to make available, in an easy to use form, all the useful information about isotopes. This new and unusual chart is designed and lithographed in ten colors to make possible rapid identification of isotope half-life and nuclear stability.

The CHART OF THE ISOTOPES is 60 by 48 inches with metal edges for hanging. Printed on Texoprint, a new plastic impregnated fibre paper developed for navy charts, it is washable, non-creasing and extremely tear resistant. The guide book sent with each chart outlines instructions for reading the chart, and summarizes many chart applications.

H-10950 CHART OF THE ISOTOPES—1953 edition, complete with explanatory booklet. (postage paid) . . . Each **$10.50**
Outside the continental limits of the United States.
Rolled in mailing tube (air express prepaid) . . Each **$18.00**
Outside the continental limits of the United States.
Folded without metal edges (postage paid) . . Each **$10.50**

[Check or money order must accompany your order. Please do not send cash.]

HARSHAW SCIENTIFIC
DIVISION OF THE HARSHAW CHEMICAL CO., CLEVELAND 4, OHIO

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Los Angeles 22, Calif. 3237 S. Garfield Avenue
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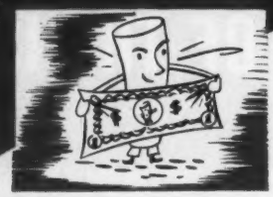
Houston 11, Texas 6622 Supply Row
Philadelphia 48, Pa. Jackson & Swanson Sts.

When inquiring check CP 2955 on handy form, pgs. 2-3

IF YOU USE "TEFLON"*...

it's only a matter of time before you are acquainted with ETHYLENE

... for one or more of these reasons:



PRICE — Specializing in Teflon has produced operating economies permitting **Ethylene** to pioneer in lower prices.

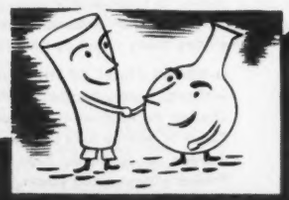
DELIVERY — **Ethylene** keeps a large stock of most items, others are usually available in a week or two.

QUALITY — Up to date on instrumentation and process control insures maximum quality.

VARIETY — **Ethylene** stocks dimensions close to *your* finished size —saving material.

ACCURACY — Close tolerances are available as standard practice in large or small quantities.

DEVELOPMENT — **Ethylene** offers engineering experience to help solve *your* problems.



HEADQUARTERS FOR TEFLON PRODUCTS

EXTRUDED OR MOLDED RODS, TUBES, AND SPECIAL SHAPES
STRESS RELIEVED OR HIGH TENSILE SHEETS AND MOLDINGS
PRECISION MACHINED COMPONENTS AND FILLED PRODUCTS

Send for illustrated Catalog 53 including stock and price lists.

"Pioneers and Specialists in TEFLON products"

ETHYLENE CHEMICAL CORPORATION

245 Broad St. • Summit, New Jersey

When inquiring check CP 2956 on handy form, pgs. 2-3

FOR THE LABORATORY

Identification of synthetic fibers can be made by microscopical or dye staining techniques . . .

knowledge of fiber composition facilitates dyeing

As a result of complications in the dyeing of the newer synthetics, textile manufacturers find it necessary to know the fiber composition of materials being dyed. Identification stain tests and microscopical identification tests have been found to be useful in this connection.

Identification Stain Tests: This type of test offers a rapid method of identification, particularly if the fibers involved are undyed. In cases where the fibers are dyed, they often can be bleached and then stained, but the bleaching may affect the subsequent staining. If the fibers have been treated with chemicals such as anti-static agents, these may affect the stain reactions. In addition, if the agents are not permanently attached to the fiber, they will also have an effect on dyeing if not removed.

Dyes which have been selected because of their specific dyeing affinity for certain fibers are combined to form an identification stain. A number of these stains have been developed by dye manufacturers and others in the textile field. Each stain has certain characteristics which make it better for identification of certain fibers than for others.

Since the period of contact with the coloring bath in these tests is only one minute at the boil, this is not long enough for penetration and fixation of the dye in the fiber. Hence, the term "stain" is used in contrast to possible use of the term "dye."

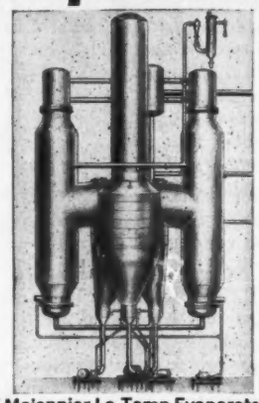
Measurement of Refractive Indices: While these methods are difficult to carry out in a practical way, they do provide positive methods of identification when used by a trained microscopist. This procedure requires standardized liquids with different refractive indices; the Becke method is used to determine the refractive index of the fibers under the polarizing microscope when the fibers are immersed in these various liquids.

In addition to being valuable in confirming fiber identity, this procedure is also useful in studying fiber structure. Such studies often indicate why dyes do not penetrate or diffuse as rapidly through certain fibers which are oriented differently than others of similar composition. Furthermore, this method provides a useful method of identification when cross-sectional or longitudinal appearances are quite similar.

Microscopical Identification Tests: Fibers can be identified under the microscope in longitudinal view and cross-section. In general, the longitudinal examination is valuable in cases where stained fibers are being examined to pick out the various fibers. It is also useful in identifying those fibers which have a surface structure like wool and mohair, which have scales on their surface.

By giving a more representative view of many fibers which are under examination, the cross-sectioning technique provides in many cases a more positive method of identification than longi-

45° to 100° Evaporation



THE Mojonnier Lo-Temp Evaporator provides evaporation as low as 45° F. and complete recovery of condensate. Present applications in the Chemical Process Industries include concentration of heat sensitive pharmaceuticals and anti-biotics, low temperature fractionation and distillation of solutions, and distillation of flavor extracts and essences. In the Lo-Temp, high pressure ammonia gas is used as the heating medium, and low pressure ammonia is used to condense the vapors from the product. Advantages of this system are:

1. 45° to 100° evaporation, and complete condensate recovery.
2. Operating costs 27%-55% less than steam evaporators.
3. Stainless steel sanitary construction.
4. Reduced overall plant electrical costs.
5. Less cleaning cost, less time out of production for cleaning.
6. No water or sewage disposal problems.
7. Less space required for evaporator and auxiliary equipment.
8. No product damage from backfiring of boosters —no boosters are used.
9. No product damage from high evaporating temperatures.
10. Lower overall capital investment in evaporator and auxiliary equipment.
11. Simplified automatic operation, and one man control of evaporator and compressor.

Available in packaged Laboratory Model; Pilot Models; and large capacity Commercial Models. For detailed information, write

MOJONNIER BROS. CO.

4601 West Ohio Street • Chicago 44, Illinois

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LO-TEMP EVAPORATORS

OTHER MOJONNIER PRODUCTS FOR THE CHEMICAL INDUSTRY INCLUDE: ZONE-CONTROL VATS • COLD-WALL TANKS • COMPACT COOLERS • VACUUM FILLERS • SPRAY DRYERS TUBULAR EVAPORATORS

When inquiring check CP 2957 on handy form, pgs. 2-3

tudinal examination. In addition to facilitating fiber identification, this method has been used to identify and determine the location of various textile agents and resins.

Slips from the preparation of cross-sections can be mounted directly on a microscope slide in a mounting medium, or a proper dye or stain can be applied prior to mounting of the specimen.

Cross-sectional and longitudinal methods can be used to detect pigments or oils that have been added for delustering or dulling of the synthetic fibers.

(Detailed discussion of the above identification tests, a comprehensive outline of the various available stains and an informative description of the use of the microscopical tests are available in Calco Technical Bulletin No. 831, issued by Calco Chemical Div., American Cyanamid Co., Dept. CP, Bound Brook, N. J. . . . or for more information check CP 2958 on handy form, pages 2 and 3.)

Lightweight spatula for semi-micro use

Uses: Designed especially for use in connection with semi-micro chemical methods of analysis.

Features: Blades of spatula, tapered to 0.015", spring back to shape after being bent, but can be forced to assume a permanent bend if necessary for some special purpose.

Description: Made of non-magnetic stainless steel, the spatula is highly resistant to corrosion from all but the most powerful laboratory reagents. Light in weight, but large enough to fit easily in the fingers, unit has one end tapered down to a 3.5-mm rounded tip to simplify removal of precipitates from 5-ml conical centrifuge tubes. The other end is flattened to a slightly rounded 6.5-mm tip for work with the regular centrifuge tube.

(Product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 2958A on handy form, pages 2 and 3.)

For more information on product at right, specify CP 2959 . . . see information request blank between pages 2-3.

FILTER BAGS OF

ORLON

OUTLAST OTHERS

2 TO 1

AT SMELTING PLANT

Violent automatic shaking and corrosive smoke at temperatures of 250°F. cut the service life of ordinary filter bags to six months in a large smelting firm's smoke-control units. Repairs were frequent and costly . . . until the plant superintendent tried filter bags of "Orlon".

He found that filter bags of "Orlon" acrylic fiber lasted over a year in this severe service—*more than twice as long as the bags previously used.* Yet their purchase price was substantially less! This combination of long life and economy caused the superintendent to recommend filter bags of "Orlon" for all of the firm's smoke-control units.

That's the experience of R. Lavin & Sons, Inc., smelters and refiners of brass and bronze ingots, whose two smelting plants in the Chicago area are currently using large numbers of filter bags of "Orlon". Tons of valuable zinc oxide are recovered by the bags each month. The job of filtering is so thorough that stack emission is 99% clear—a great step forward in this firm's community relations.

Here, as in so many cases, the remarkable properties of "Orlon" mean greater efficiency, longer service. For "Orlon" resists heat and corrosion . . . retains its strength under conditions that cause ordinary fibers to deteriorate. Perhaps "Orlon" can help *you* improve a product or production process.

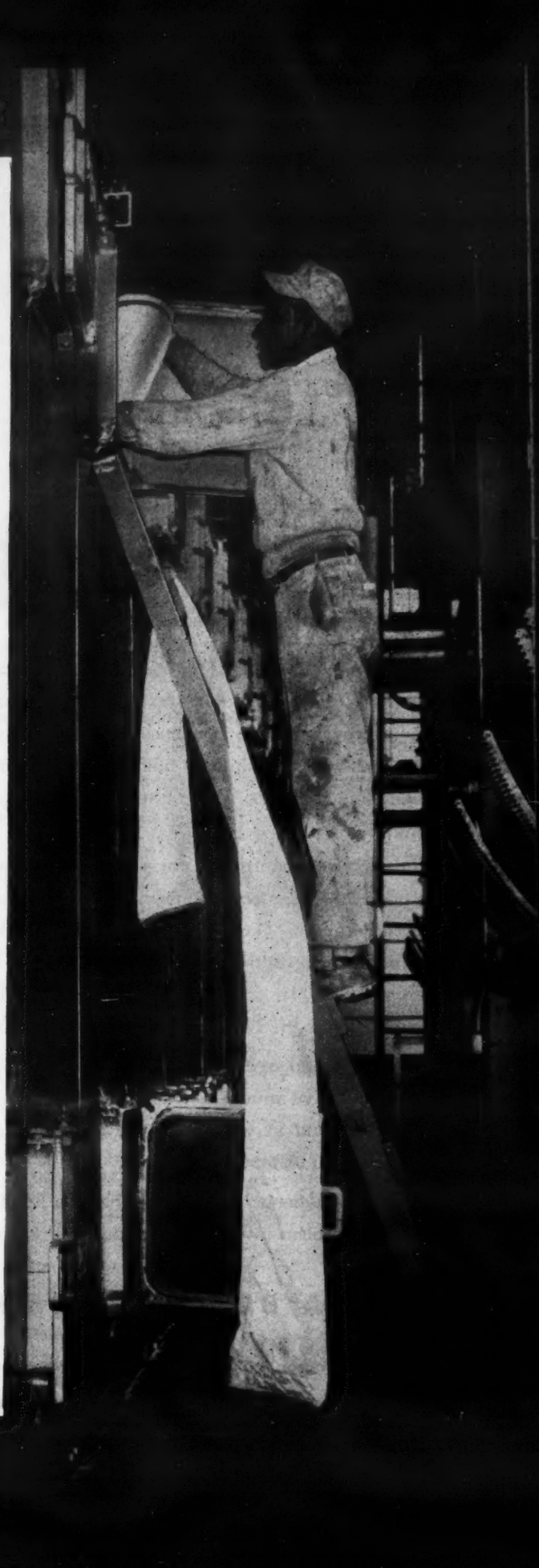
For a list of filter-equipment manufacturers using "Orlon" and for other information, write: E. I. du Pont de Nemours & Co. (Inc.), Room N-2522-P, Wilmington 98, Delaware.

ORLON is Du Pont's trade-mark for its acrylic fiber.

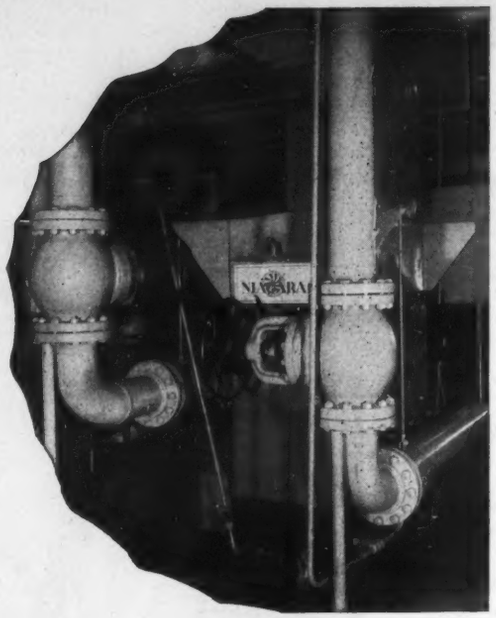
DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . THROUGH CHEMISTRY



How to get drier or cooler air or gases . . .



NIAGARA AERO AFTER COOLER cools a compressed gas, or air, below the temperature of the surrounding atmosphere, thus preventing the condensation of moisture in your lines. The gas will contain only half of the moisture left in it by conventional methods. Even drier gas can be produced if you require it.

In working with controlled atmospheres of inert gases to prevent undesired reactions, this dryness of the gas at low cost is a great advantage. The cost of the Niagara method is low because it uses evaporative cooling, saving 95% of the cost of cooling water (and its piping and pumping). This direct saving of cost pays for the Niagara cooler in less than two years.

If you use compressed air to operate tools or pneumatic equipment you save much in water and oil damage to tools and equipment, and in water damage to materials by using the Niagara Aero After Cooler.

Write for a bulletin, or ask nearest Niagara Field Engineer if you have a problem involving the industrial use of air.

NIAGARA BLOWER COMPANY

Over 35 Years' Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave. New York 17, N. Y.

Experienced Field Engineers in Principal Cities of U. S. and Canada

When inquiring check CP 2960 on handy form, pgs. 2-3

FOR THE LABORATORY

Portable hardness tester permits testing of inaccessible parts of assembled units . . .

single combination unit is capable of handling a wide range of hardness

Uses: Tests ferrous and non-ferrous metals in a wide range of sizes and shapes.

Features: A special combination of the unit and an electro-magnetic stand make it possible to test many normally inaccessible parts of large assembled or partly dismantled units.

Description: The Penetrascope is capable of handling hardness tests in the 16 to 800/1000 DPH range (from softer than O Rockwell B to 64/69 Rockwell C), with readings obtainable up to about 1500 DPH (75 Rockwell C). The device is not intended as one of limited accuracy.

The Model A.18 is a versatile unit capable of both conventional and multiple angle testing. It consists of a basic unit movably mounted on a slotted stand, the base of which contains electro-magnets which hold the unit firmly to a steel floor, surface table, or ferrous base. The unit employs no clamp in front of the indenter; hence, many places considered inaccessible to other accurate hardness testing instruments may be easily reached.

The basic instrument includes a 2″ C-clamp for small work. Standard alternative clamps — which include various larger C-clamps, a chain clamp and an electro-magnetic clamp — enable the unit to test a large variety of objects of unlimited size and various shapes, on site, in the shop, or in the laboratory.

(Unit is a product of C. Tennant, Sons & Co. of New York, Dept. CP, 100 Park Ave., New York 17, N. Y. . . or for more information check CP 2961 on handy form, pages 2 and 3.)

Compact apparatus identifies and purifies materials by sublimation . . .

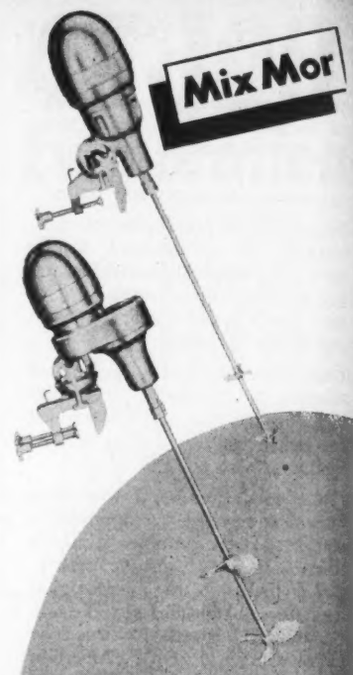
for use at temps from room to 300°C

Uses: For purification and identification of organic compounds which sublime in the range 0 to 300°C.

Features: Components for sublimation process on a semi-micro scale are compactly assembled in apparatus.

Description: The Sargent Sublimation Apparatus consists of an electrically-heated cylindrical aluminum block furnace mounted in line on a common frame with a water-cooled condenser. Two cartridge-type heaters are inserted into the metal block and supply heat at a rate determined by a variable transformer controlled by a front panel knob. Furnace is insulated on all sides and covered by an aluminum shell. It is provided with a thermometer well and is drilled axially to accommodate tubes up to 35 mm in diameter.

Two types of tubes are available for use with unit — for semi-micro and micro samples, respectively.



MixMor—the newest name in portable mixers for fluids. All models and sizes as commonly used, are available for prompt delivery. Soundly engineered, and thoroughly guaranteed, comparison is invited on price, performance, ease in handling and all other points.

All models use NEMA, flange mounting motors, shaft holding device uses simple Allen wrench. No special tools are required. Modern machining methods eliminate many parts and insure low cost maintenance and Long Life. Use a MixMor and enjoy economy, service, and performance.

Send for Specification Dimension and simplified application data sheet. Also for horizontal-in-tank mixer sheet for your reference file.

Representatives in all principal areas. Discount to jobbers — OEM and Engineering firms.

L. H. BUTCHER CO.
A Subsidiary of the Udylite Corp.
15th and Vermont Streets, San Francisco 1, Calif.

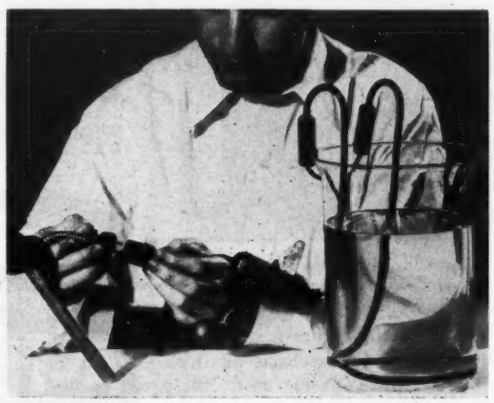
When inquiring check CP 2962 on handy form, pgs. 2-3

Each type consists of a standard test tube with a V-shaped indentation near the closed end which serves as a well for retention of the sample.

(Manufactured by E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. . . . or for more information reader may simply check CP 2964 on convenient Reader Service slip between pages two and three.)

Thermostat with quick disconnect allows reduction in number of units required for lab

Designed to facilitate transfer from any water bath to another bath or heated device of any kind, a thermostat having a quick disconnect plug makes it possible to reduce the number of thermostats needed around the laboratory. Use of this type of unit eliminates an investment of one thermostat for each heated device in laboratory — ratio necessary when thermostats are permanently wired into system.



Quick disconnect arrangement allows flexibility in use of thermostats. Note neon pilot light in the cube tap in the heater power line. This simple device gives a continuous visual check as to whether the heating system is operating satisfactorily or not

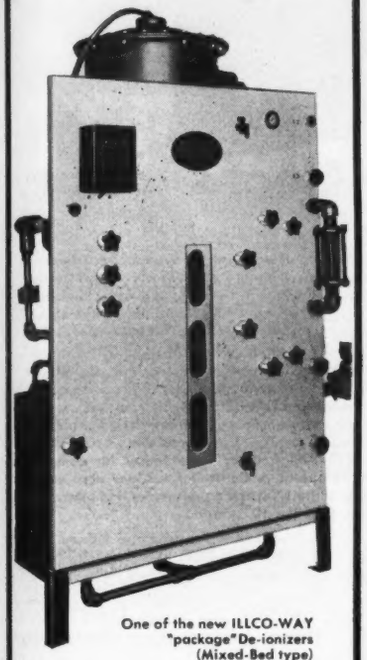
A female connector is wired in series with the power cord to the heater. Wiring the connector in series prevents the heater from being used inadvertently without a controlling thermostat. To use the heater, the thermostat is merely plugged in to complete the circuit.

As illustrated in the accompanying photograph, a thermostat is available with the male connector installed at the end of a short armored cable. Unit, which may be used with equal accuracy in a liquid, gaseous, or solid medium, can be adjusted to control over a 500°F range and heavy duty models can handle electrical loads of up to 25 amp at 110 v AC or their equivalent.

(Thermostat which is illustrated is available from Fenwal Incorporated, Dept. CP, Ashland, Mass. . . . or for more information simply check CP 2965 on convenient Reader Service slip between pages two and three.)

De-ionized Water

in a "package"



One of the new ILLCO-WAY "package" De-ionizers (Mixed-Bed type)

A complete line of standard (package-type) De-ionizers—for production of solids-free De-ionized water (flow rates from 100 to 1000 gph.). Three types: Mixed-Bed and standard two-bed, with or without silica removal. Ideal production units; convenient for laboratory and pilot-plant research.

Units are compact, shipped completely assembled and base-mounted for ease of installation and operation, requiring only connection to raw water, drain, and treated water outlets.

Send for your free copy . . .

of Bulletin PK-152, containing general unit specifications, complete description of equipment and performance data. Please write on company letterhead. Address: Illinois Water Treatment Co., 903-8 Cedar St., Rockford, Illinois.

Which package ?

ILLCO-WAY

ionXchange

When inquiring check CP 2963 on handy form, pgs. 2-3

RICHMOND super-sifter

". . . doing a better job . . ." in a Wood Flour Mill

Mr. James B. Stamps, Vice-President, Allen-Rogers Corporation (turned wood products) recently wrote:

"Our new flour mill has been in operation for something over a year now, and we have had an opportunity to observe closely the results which we are obtaining from the sifter, magnets, and stream splitter which we purchased from your company.

"We are very happy to tell you that in all cases these are performing satisfactorily and are indeed doing a better job than any other similar devices which we have used in the past."

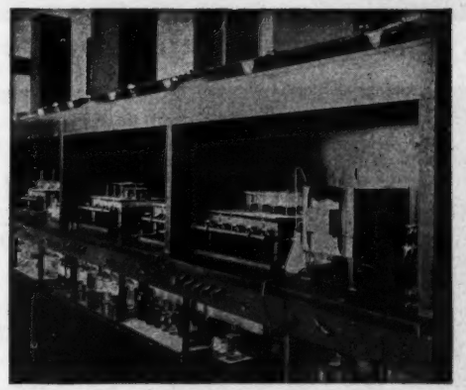
Perhaps your plant can profit from the use of RICHMOND SIFTERS, too.

R-21

RICHMOND MANUFACTURING COMPANY
AFFILIATED WITH NOVADEL-AGENE CORP.
LOCKPORT, NEW YORK

When inquiring check CP 2966 on handy form, pgs. 2-3

make* Perchloric Acid *handling safer!



Alberene Perchloric Hoods in Research Laboratory, International Nickel Company, Inc., Bayonne, New Jersey

Precautions that must be taken in handling perchloric acid make special hoods a necessity. Now Alberene Stone offers you fume hoods *specially designed* to reduce hazards in working with perchloric acid . . . *specially designed* to give you greater safety. For prompt advice on any of your fume problems write Alberene Stone Corporation of Virginia, 419 4th Ave., N. Y. 16, N. Y., or visit our nearest branch office.

FREE REPRINTS of an article giving helpful hints on safe handling of perchloric acid are yours for the asking. Just write today on your company letterhead.

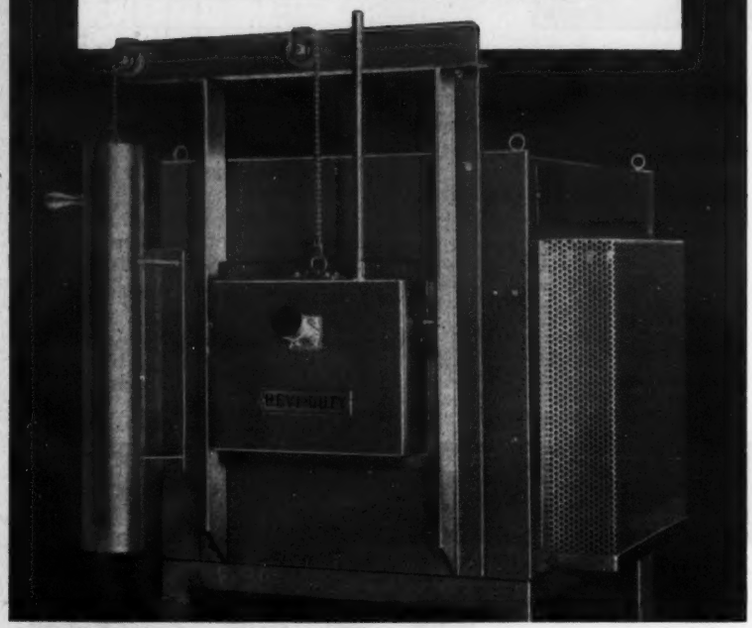
ALBERENE STONE

Branches in Principal Cities

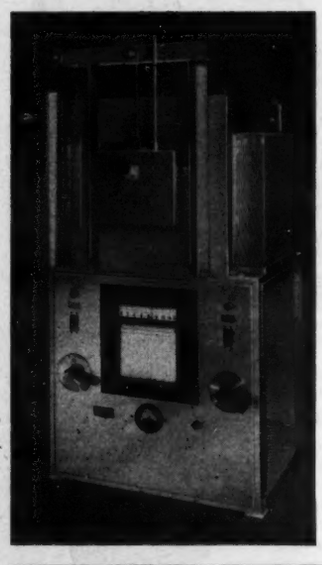
When inquiring check CP 2967 on handy form, pgs. 2-3

TEMPERATURES TO 2600° F.

with a HEVI DUTY
G-8156 HIGH TEMPERATURE
BOX FURNACE



. . . for heat-treating operations requiring elevated temperatures for *RESEARCH* *CERAMICS* and *High Speed STEELS*



Silicon Carbide (* Globar) heating elements located above and below a sealed muffle assure even heat distribution throughout the work chamber. Connections for using a protective atmosphere are provided.

The furnace is available in several sizes with or without the control base as shown in the insert. Transformers, pyrometer and circuit breakers can be supplied as required.

Write for bulletin HD-741

*** trademark, Carborundum Co.**

HEVI DUTY ELECTRIC COMPANY
HEAT TREATING FURNACES HEVI-DUTY ELECTRIC EXCLUSIVELY
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS
MILWAUKEE 1, WISCONSIN

When inquiring check CP 2968 on handy form, pgs. 2-3

LABORATORY

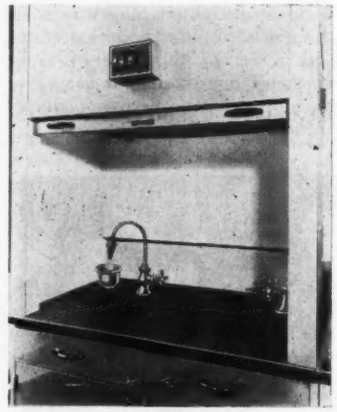
30" shockproof top boosts fume hood work space . . .

working depth is increased by about 30 per cent

Uses: Gives chemical and heat resistance as well as increasing available working space.

Features: Will not crack or chip under conditions of heat concentration normally encountered in fume hoods.

Description: The Fisher Kemstone Fume-hood Top requires no reagent shelf for fit, extending



Top adds to working space of hood while protecting against heat and chemicals

all the way to the back of the hood. However, to meet the desires of any potential user, the top has been designed for installation with or without the reagent shelf.

To form the top, Kemstone — lacking the "lines of fracture" found in natural stone — is molded under pressure into sheets of unusual strength. To assure protection against organic solvents, these sheets are impregnated with a chemical-resistant polymerized resin. A drip-groove under the front edge protects the cabinet from chemicals which might be spilled on table top.

The top is available in a single sheet 47 1/16 x 30 x 1¼".

(Available from Fisher Scientific Company, Dept. CP, 717 Forbes Street, Pittsburgh 19, Pa. . . . or reader may secure more information by simply checking CP 2969 on convenient Reader Service slip between pages 2 and 3.)

Electronic Temperature Control

. . . with Alnor Accuracy

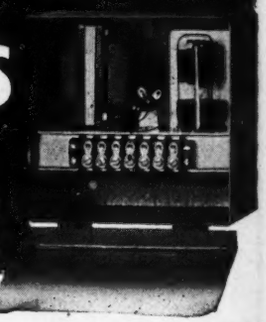
Alnor, pioneer in the field of electronic temperature instruments, brings you automatic, precise temperature control for heat-treating furnaces, bake ovens—in fact, for any heating device whether electrically heated or fuel fired. It's the Alnor Temperature Controller—simple in design and operation, its accuracy proved on thousands of installations in many industries.

Easily and quickly installed, this instrument is ready to give you accurate controller service on new or existing heating equipment temperature—you merely set the pointer at the desired temperature and forget your indicating and controlling problems. But find out for yourself how Alnor accuracy and dependability can serve you in controller service; write today for complete details on the Alnor Temperature Controller. . . Alnor accuracy at a price you can afford. Illinois Testing Laboratories, Inc., Rm. 504 420 N. La Salle Street, Chicago 10, Illinois.

Alnor PRECISION INSTRUMENTS FOR EVERY INDUSTRY

When inquiring check CP 2970 on handy form, pgs. 2-3

only .1 OR .01 OR .001 MICROAMPERE ACTIVATES THESE Ultra-Sensitive RELAYS



CHOOSE from 22 MODELS

- Thermoregulation
- Liquid Level Control
- Pressure Control
- Flame Sensing
- Counting - Gauging
- Safety Indicator
- Position Indicator

Devtronics engineers have developed three new outstanding basic relay circuits. The sensing elements use activating currents of .1, .01, and .001 microamperes with input resistances as high as 500 megohms. For instant response, hermetically sealed snap-action relays are used, which make and break in the neighborhood of 25 milliseconds. They can carry 30 ampere non-inductive loads.

DISTRIBUTORS for DEVTRONICS, INC.

Write Today for Detailed Bulletin

PARA LABORATORY SUPPLY CO.
221 N. HERMITAGE AVE
TRENTON, N. J.

When inquiring check CP 2971 on handy form, pgs. 2-3

WORLD'S FINEST PACKING & GASKET MATERIAL

TEFLON

IS PROCESSED BEST BY CHEMICAL & POWER PRODUCTS

BECAUSE:

Whether your need is for V. type packing expansion joints, machined or molded parts or for Teflon in sheets, rods and tubes you can't beat Chemical & Power Products record of:

EXPERIENCE: First manufacturer of satisfactory resilient Teflon packing in the U. S.

REPUTATION FOR QUALITY: Customers return time after time because they know that regardless of the size of the order or the processing problem, only the best in finished materials is allowed to be shipped.

Convince yourself that Chem-Power is the right source for you. Send for Catalog and price list today.

CHEMICAL & POWER PRODUCTS, Inc.

11 Broadway New York 4, N. Y.

When inquiring check CP 2972 on handy form, pgs. 2-3

Industrial radiographic equipment available in two sizes

Uses: Meets requirements for radiographic and fluoroscopic industrial examinations.

Features: Design permits pre-indication of the high voltage required as well as the measurement of true tube voltage during operation, regardless of tube current.

Description: Designed for 150 and 300 KvP applications, the Norelco X-ray units are specifically intended for industrial applications and are not merely medical units which have been re-adapted for this type of work.

Both the 150 and 300 KvP units have controls and generators equipped with transport loops and handles to permit easy handling. The 150 KvP unit is supplied with one generator which is housed in a single tank to save space, reduce weight and facilitate moving.

Constant potential reduces exposure time, gives a brighter and flicker-free fluoroscopic image. The 300 KvP unit uses two generators for operation of the double-pole X-ray tube. The 150 KvP unit can be converted at any time into a 300 KvP unit merely by the addition of one generator, one cable, and a 300 KvP X-ray tube.

Four X-ray tubes are available for use with the 150 KvP radiography equipment. The 150 KvP Rod Anode Tube has a working end 2" in dia x 15" long. It delivers X-radiation in a 360° radius. Tube is well adapted for the inspection of circular welds in pipes or for insertion into castings with small or narrow openings or for radiography of castings which are arranged circumferentially around the tube.

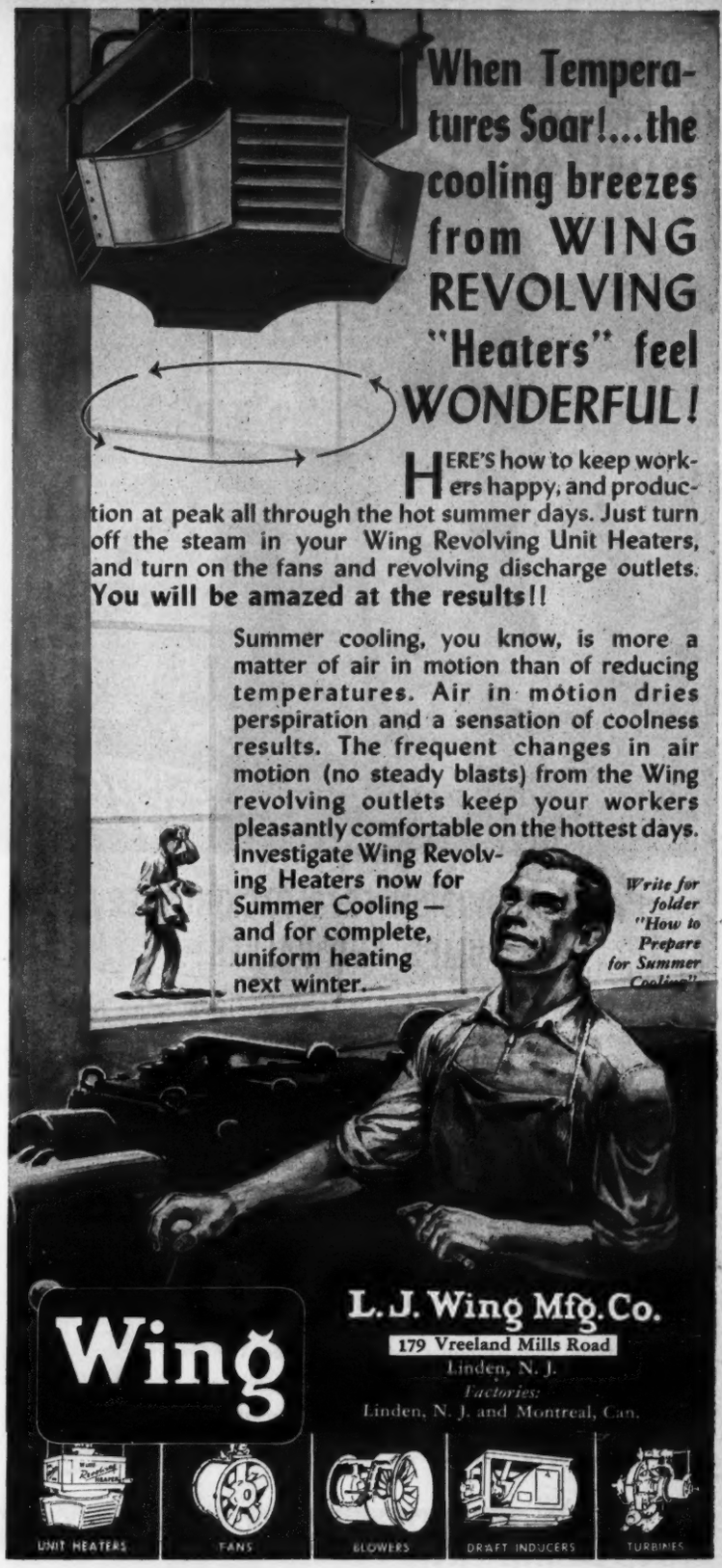
The 150 KvP Current Tube is operable continuously at 20 ma. It has a 4 mm focal spot. X-ray port at the end of the housing at right angles to the long axis of the tube makes adjustments easy and permits reaching inaccessible areas and objects.

The Double Focus Tube has one focal spot of 4 mm. Companion filament has a focal spot projection of 1.5 mm and its use materially improves the sharpness of small size defects. It is particularly useful in fluoroscopy of light metal objects and castings. Provision is made on the control table for instant switching between foci.

The Double Fractional Focus Tube for 150 KvP operation has in addition to the 1.5 mm focus an extremely fine companion 0.4 mm focus. It provides direct enlargement radiographs by taking advantage of projection magnification.

The 300 KvP tube has a focal spot of 5 mm and is rated 10 ma, continuous use. It is well adapted for work where heavy objects must be penetrated such as in the case of boiler drums, welds and steel castings.

(Radiographic equipment is manufactured by Research and Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mt. Vernon, N. Y. . . . or for more information check CP 2973 on handy form, pages 2 and 3.)


When Temperatures Soar!...the cooling breezes from WING REVOLVING "Heaters" feel WONDERFUL!
HERE'S how to keep workers happy, and production at peak all through the hot summer days. Just turn off the steam in your Wing Revolving Unit Heaters, and turn on the fans and revolving discharge outlets. You will be amazed at the results!!
Summer cooling, you know, is more a matter of air in motion than of reducing temperatures. Air in motion dries perspiration and a sensation of coolness results. The frequent changes in air motion (no steady blasts) from the Wing revolving outlets keep your workers pleasantly comfortable on the hottest days. Investigate Wing Revolving Heaters now for Summer Cooling — and for complete, uniform heating next winter.
Write for folder "How to Prepare for Summer Cooling"
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FANS
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DRAFT INDUCERS
TURBINES

When inquiring check CP 2974 on handy form, pgs. 2-3

acids . . . gases . . . hot liquids . . .

SOLVE YOUR SPECIAL PACKING PROBLEMS..

for **CORROSION-FREE PACKING SERVICE IN PUMPS AND VALVES....**

You can effectively handle any corrosive liquid or gas by repacking your valves and pumps with "John Crane" Chemlon "C-V" Rings. Molded from the remarkable material, Teflon, "John Crane" Chemlon "C-V" Rings are impervious to almost every known chemical substance. They withstand extreme temperatures from −94° to +482°F—have extremely low friction coefficient. "Breakout" friction is only slightly higher than that of running friction. Special cross sectional design affords positive sealing at practically finger-tight gland pressure.

To bring you all the important advantages of Teflon for your particular sealing problem or application, "John Crane" has developed a complete line of Chemlon "C-V" Rings and male and female adapters. If you have special requirements, additional sizes can be molded to fit your stuffing box dimensions.

"John Crane's" illustrated booklet "The Best in Teflon" contains extensive information on a wide variety of Chemlon Products. Send for your free copy. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Ill.

*DuPont's trademark for tetrafluoroethylene resin

JOHN CRANE CRANE PACKING COMPANY

When inquiring check CP 2975 on handy form, pgs. 2-3

LABORATORY

Convenient test kit permits rapidity in pH checks

Complete Fisher Alkacid pH Test Kit includes a long-range pH Tester and a selection of short-range test papers that divide the entire pH scale of 0 to 14 into distinctive colors for each half unit. It is claimed that this arrangement permits estimations to one-fourth unit or closer.

To use the kit, the chemist merely moistens a strip of the appropriate paper; matches while wet with the color key printed on a plastic dispenser. Unit combines the simplicity and speed of the litmus test with the versatility of more sensitive indicators.

Complete kit is available in a convenient wooden case; it contains one long-range Alkacid Tester in a patented vapor-resistant plastic dispenser and dispensers for each short range paper.

(Available from Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 2976 on handy form, pages 2 and 3.)

Measure gas volumes used in reactors

Uses: For accurately measuring gas volumes used in reactors; flow of gases in experimental and pilot plant operation; heat value determination; and calibration of other flow measuring devices.

Features: Removable back provides for ease of cleaning and repairing when meters are used on dirty and corrosive gases.

Description: Labline Wet Test Meters incorporate low differential rotating drums; low meniscus gage glasses; stainless steel pointers for setting exact water level; and rigid cases for accurate bearing alignment.

Units are made in brass, Monel, or stainless steel. Exterior of meters is finished in aluminum to offset effect of changing external temperatures. Available in sizes from 10 to 1200 cfh.

(Manufactured by Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 2977 on handy Reader Service slip between pages 2 and 3.)

ALCONOX.®....

Outsells and Outperforms All Other

HOSPITAL and LABORATORY DETERGENTS

For less than 2½ cents a gallon, all laboratory glassware, metalware, porcelain, silverware, etc., can now be kept sparkling clean and film-free with a minimum of effort.

In addition, Alconox works with equal effectiveness in either hard or soft water, hot or cold—and is absolutely harmless to human tissue . . .

Try it—Buy it—and You'll Buy it again.

Available in

Box of 3 lb.	—	price	$1.95
Carton (12 x 3 lb.)	—	ea.	18.00
Bag of 50 lb.	—	lb.	.40
Drum of 100 lb.	—	lb.	.40
Barrel of 300 lb.	—	lb.	.37

If your dealer cannot supply you, write for literature and samples.

Dept. CP-8

ALCONOX ALCONOX, INC. ALCONOX

When inquiring check CP 2978 on handy form, pgs. 2-3

WHAT'S YOUR *GRINDING PROBLEM?*

If you're wondering how to crush, granulate, or pulverize some kind of material, maybe the same kind of a job or a similar one is already being done with our machines. Then the answer to your question is easy.

However, you may have an entirely new grinding problem. If so, we'd like to find the answer in our research and testing laboratories.

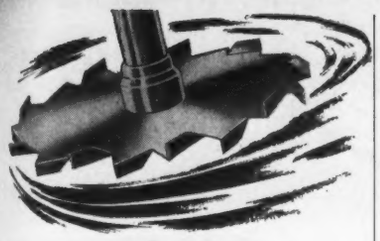
The functions of these laboratories are to conduct and evaluate pilot tests on materials in behalf of processors; to make short production runs on commercial-size machines; to develop and adapt machines for heretofore untried processess.

You are invited to communicate with us. Our knowledge and facilities may be of great value to you.

Bauer

THE BAUER BROS. CO.
1728 Sheridan Ave.
Springfield, Ohio
Established 1878

When inquiring check CP 2979 on handy form, pgs. 2-3



read these
FACTS

1 NO BAFFLES NEEDED

The Cowles Dissolver mixes your batch thoroughly without using baffles—thanks to its high speed and the speed differential between the rotary motion of the batch and the impeller.

2 SOME VORTEX DESIRABLE

Don't be afraid of vortex! Some vortex is desirable because it provides a means for checking the impeller feed in the Cowles high speed centrifugal action.

3 NO PLUGGED-UP HOLES

The Cowles Dissolver has no slots or holes that can become plugged up with large chunks or balls. This makes cleaning faster, easier.

It dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Saves time, saves labor—improves both your product and yield per batch.

Then Choose
THE Cowles DISSOLVER

The Cowles Company
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FREE CATALOG

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113 Trackside, Cayuga, N.Y.

Please send me your latest Cowles Dissolver Catalog

NAME_____

COMPANY_____

STREET_____

CITY & STATE_____

When inquiring check CP 2980 on handy form, pgs. 2-3

Seven different shaking tables can be used with versatile gyratory shaker . . .

accommodates flasks from 50 to 500 ml

Uses: Production of antibiotics in deep culture; fermentation requiring vigorous aeration and avoidance of pellicle formation; mixing of solutions, emulsions, dispersions, colloids and liquids; bringing about reactions requiring shaking; dissolving of chemicals; and precipitation of phosphomolybdate in fertilizer analysis (AOAC Methods of Analysis).

Features: Offering a large capacity, it is a compact unit 23 x 16 x 12½", yet, it accommodates a wide variety of laboratory glassware, either small or large.

Description: Designed with sturdy and precision construction, the New Brunswick Gyratory Shaker, Model S-3, incorporates an oscillating stabilizer which gives positive, uniform, eccentric motion and eliminates the need for springs or

Accommodates 7 different sizes and shapes of glassware

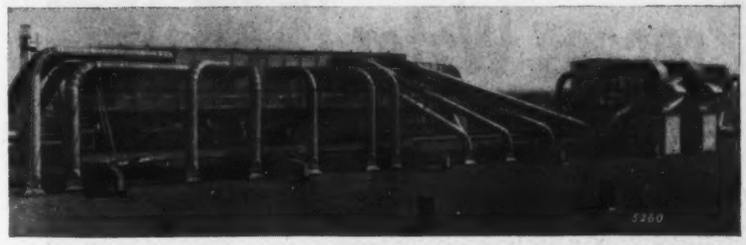
universal joints. Mechanical speed control of better than 3 to 1 ratio, or 85 to 285 oscillations per minute is attained by simply turning the handle conveniently located on the top of the machine. Unit also incorporates an automatic timing device which stops the shaker at the end of any selected time up to 55 minutes. It can also be set for continuous operation.

Shaker can be equipped with 7 interchangeable table styles to hold any of the following laboratory glassware: Erlenmeyer flasks — 50, 125 or 500 ml sizes; test tubes of 13, 20 or 25 mm sizes; or Petri dishes, slides and other glassware.

Power is provided by a 1/20 hp, 1140 rpm, 110 v, 60 cycle, ball-bearing motor operating on AC only.

(Manufactured by New Brunswick Scientific Co., Dept. CP, 10 Hiram St., New Brunswick, N. J. . . . or for more information reader may simply check CP 2981 on convenient Reader Service slip between pages two and three.)

SLY PIONEERS and LEADERS in INDUSTRIAL DUST CONTROL



Philip Morris plant at Louisville, Ky. with Sly Dust Filters on roof.

Ducts leading from tobacco separators to Sly Dust Filters handling a total of 96,000 cfm.

NO DUST HANG-OVER

PHILIP MORRIS IS GLAD THIS YEAR THEY INSTALLED SLY YESTERYEAR

• Something wonderful happened in the construction of this modern Philip Morris plant. It was designed and equipped for *dust-free* operation.

Tobacco dust, created in stemming operations, is drawn through ducts to the four large Sly Dust Filters on the roof, and thoroughly filtered.

The clean air is then returned to the plant and recirculated — saving substantially on winter heating costs.

Philip Morris knows the value of Sly Dust Filters by experience, having purchased these units throughout the past five years.

Because of their larger filtering capacity and easy replacement of bags, Sly Dust Filters offer definite advantages in economy of operation and lower maintenance.

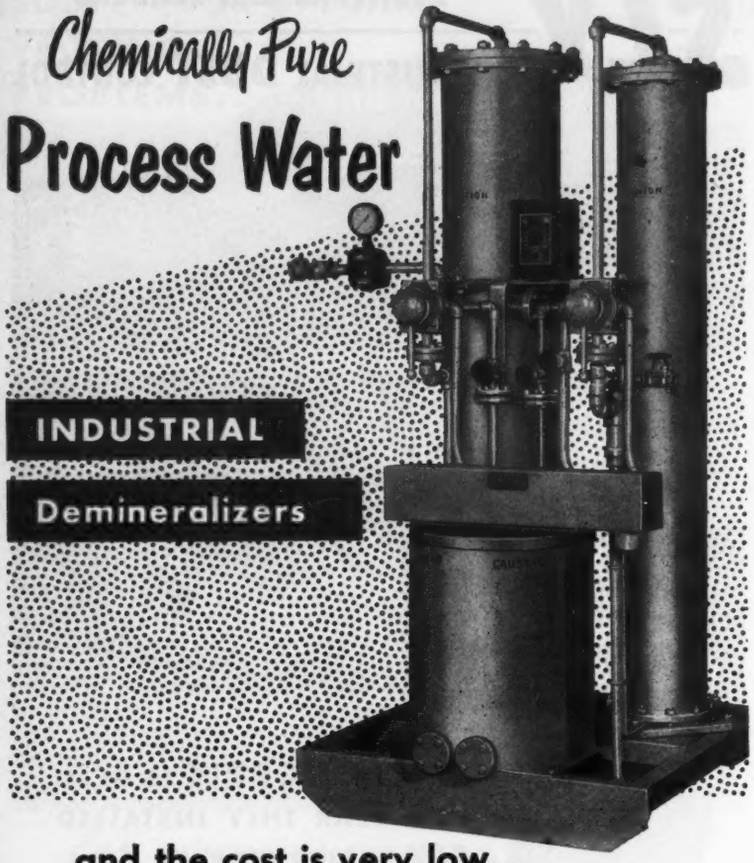
If you will tell us your dust problem we shall be glad to tell you what can be done about it and give you an estimate of cost.

THE W. W. SLY MANUFACTURING CO.
4754 TRAIN AVENUE • CLEVELAND 2, OHIO
New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo
Cincinnati • St. Louis • Minneapolis • Birmingham • Los Angeles • Toronto

When inquiring check CP 2982 on handy form, pgs. 2-3

Chemically Pure

Process Water



and the cost is very low...

With an INDUSTRIAL demineralizer chemically pure water, in any quantity, runs as low as a few cents per thousand gallons, depending upon the amount of dissolved solids in the raw supply water. And the equipment required is very simple — no heat, steam, or cooling water is used. Units can be made to deliver almost any quantity of purified water. The operation is practically automatic — only limited attention is needed periodically.

INDUSTRIAL demineralizers are supplied with necessary equipment including resins, pressure gauge, flowmeter, purity indicator, control valves, and with vulcanized rubber lining in columns and regenerant tanks.

Standard INDUSTRIAL demineralizer units have capacities up to 1000 gph. Special units of any capacity are engineered to special requirements of quality or quantity

Full particulars and recommendations for any job will be given upon request.

4320

INDUSTRIAL
FILTER & PUMP MFG. CO.
5908 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS

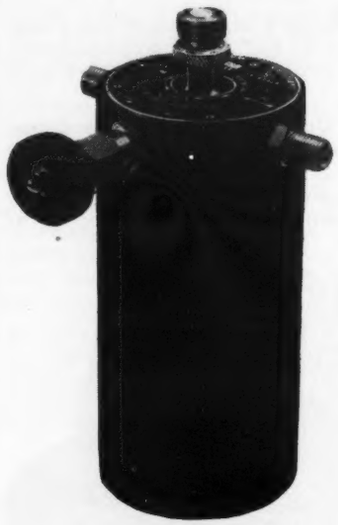
When inquiring check CP 2983 on handy form, pgs. 2-3

Self-contained unit provides accurate pressure control . . .

placed in system, it functions without any supervision

Uses: Pressure control in laboratory, pilot plant and industry.

Features: Has only to be placed in the system, set, and it functions without any supervision.



Provides pressure control in laboratory, pilot plant and industry

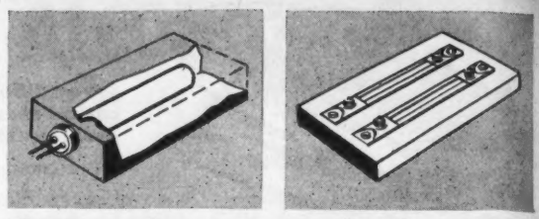
Description: Designed with an anodized aluminum body, the Cartesian Manostat No. 8 incorporates high sensitivity, high capacity and corrosion resistance.

The unit is intended to replace the Cartesian Manostat No. 5 and is improved by replacement of the stopcock with a needle valve by-pass.

(Product of The Emil Greiner Co., Dept. CP, 20-26 N. Moore St., New York 13, N. Y. . . . or for more information check CP 2984 on handy Reader Service slip, pages 2 and 3.)

Laboratory burner simplifies multiple reagent testing

Uses: Concentrating acid and alkali solutions, generating steam, generating flammable gases from oil, and altering spent caustic or "doctor" solutions for recovering naphthenic acids and for waste disposal.



Heat surfaces conveniently, safely with versatile G-E Calrod* heaters

Wrapped around, cast in, clamped on or spaced away, long-life G-E Calrod heaters give you these surface heating advantages:

Convenience—localize heat right where you want it, on surfaces of all sizes.

Accuracy—thermostatic controls assure exactly the right temperature.

Versatility—sizes, shapes, and ratings are available for almost every need.

For complete information, see your nearby G-E Apparatus Representative or Distributor. And write now for this—

FREE APPLICATION BULLETIN

GEA-5097—"Heating Surfaces with Electric Heaters" Section 720-110, General Electric Company, Schenectady 5, New York.

*Reg. Trade-mark of General Electric Co.

GENERAL ELECTRIC

When inquiring check CP 2985 on handy form, pgs. 2-3

Ice Cubes...

are quickly, easily removed from Plastic Trays which, instead of being formed, are produced by a new vacuum molding process. Heat for the molding equipment is supplied by Trent Patented.

"FOLDED-and-FORMED" Heating Elements

This is but one of hundreds of different applications for these efficient, economical electric heating elements. Made in Standard and Custombuilt Racks, arranged to provide any required K. W., at temperatures to 1350°F.

What is YOUR heating problem? "Folded-and-Formed" may offer the right solution.

TRENT INC
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE PHILA 27 PA

When inquiring check CP 2986 on handy form, pgs. 2-3

accuracy at High Operating Speed with Despatch LABORATORY OVENS

Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

Chemical and analytical, drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13"x 13"x13" to 37"x25"x50".

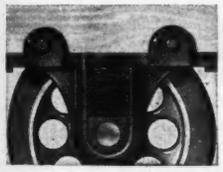
DESPATCH OVEN CO. Established in 1902

Manufacturers of Ovens For All Purposes

ASK FOR BULLETIN No. 106

343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 2987 on handy form, pgs. 2-3



PRODUCT SAVER
MAN SAVER
FLOOR SAVER

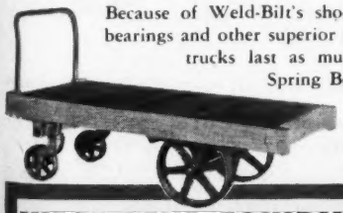
Special tempered spiral springs keep load level while absorbing shocks of an uneven floor.

Weld-Bilt

SPRING BEARING TRUCKS

Here's the answer to your problem of moving materials more efficiently, with maximum protection to product, trucker and floor.

On Weld-Bilt Spring Bearing trucks, your materials move without jarring or vibration. Your truckers work faster and easier, with less fatigue. Floor drains and door sills are protected against damage, as wheels "step" over obstruction.



Because of Weld-Bilt's shock-absorbing spring bearings and other superior mechanical features, trucks last as much as 50% longer. Spring Bearings are featured on Weld-Bilt platform trucks of all styles and designs. Write for bulletin.

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
322 WATER STREET, WEST BEND, WISCONSIN

When inquiring check CP 2988 on handy form, pgs. 2-3

Features: Nozzle mixing of combustible gases, insuring complete operational safety.

Description: Designed to simplify the job of testing reactions of a train of solutions at controlled temperatures and pressures, bench-sized laboratory burner quickly brings solutions to the desired temperature and eliminates elaborate setups for tests of this type.

Burner handles pressures up to 25 lb in the reaction chamber and will burn any of the flammable gases including H_2S. Temperatures are controlled by regulating the flame size, output ranging from 1000 to 40,000 Btu per hr. Thermometer well in reaction tee simplifies temperature readings during a test.

(Manufactured by Submerged Combustion Co. of America, Inc., Dept. CP, 759 Logan St., Hammond, Ind. . . . or for more information check CP 2989 on handy form, pages 2 and 3.)

Phase contrast microscopy has many practical uses

Unstained, colorless, transparent specimens under standard bright field illumination are generally lacking in contrast when viewed with a microscope. In order to obtain contrast so that structural detail may be recognized and studied, time-consuming methods of preparation have been necessary. Phase contrast method of microscopy is reported to overcome this difficulty. Method is applicable to fixed and dry specimens in addition.

Applications and features of phase contrast microscopy are outlined in an informative, 16-page brochure. Also described are the theory and equipment used in the method. Brochure is illustrated with a number of diagrams and photographs, including 20 photomicrographs made under magnifications ranging from 210 to 900X. Four of these show graphically the results obtained with phase contrast microscopy as compared with conventional techniques.

Cat D-104 is issued by Bausch & Lomb Optical Co., Dept. CP, 626 St. Paul St., Rochester 2, N.Y. When inquiring specify CP 2990 on handy form, pages 2 and 3.

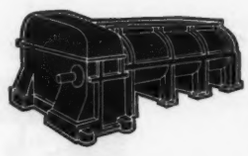
BAKER PERKINS mixers will thoroughly mix and knead almost any material for the chemical processing industry

There is a BAKER PERKINS Mixer built to efficiently mix and knead materials ranging in consistency from dry powders and light fluids to stiff plastic masses. Close clearance between the blades and trough keeps every particle of the material in constant motion so that no part of the batch escapes the thorough mixing action of the blades. Intensive kneading is maintained as the material is pulled and squeezed against the blades, saddle and sidewalls. Consult a B-P sales engineer for full facts.

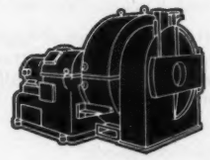
Size 16, NEM B-P "Universal" Mixing and Kneading Machine for heavy plastic masses. Working capacity 150 gallons; total capacity 225 gallons. Fabricated steel trough shell jacketed for 150 psi. steam or water pressure. Cast iron trough ends are not jacketed. Saddle section has thermocouple for temperature control. Cast steel Sigma or Double Naben blades cored for circulating steam or water. Oil tight gear guards; anti-friction bearings. 50 HP motor.

242-A

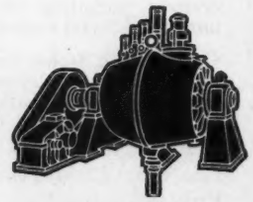
Other BAKER PERKINS products



EQUIPMENT FOR FOUNDRY INDUSTRY



CENTRIFUGALS

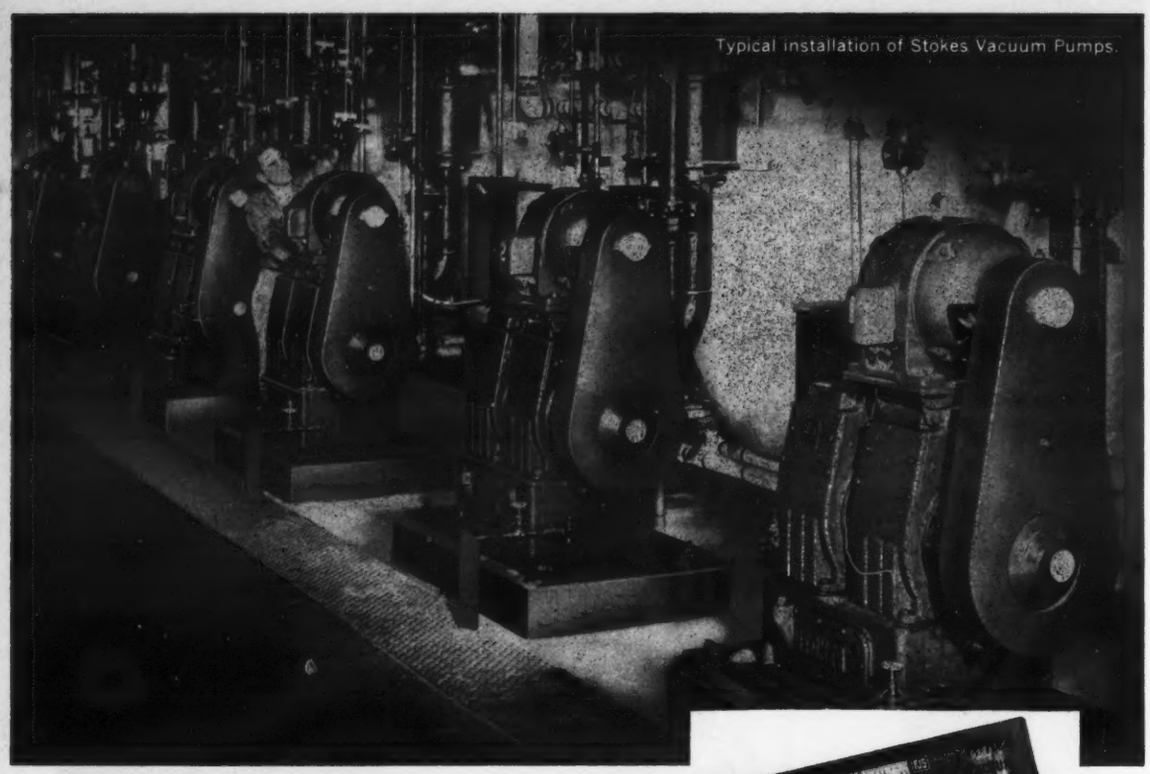


EQUIPMENT FOR RAYON PRODUCTION

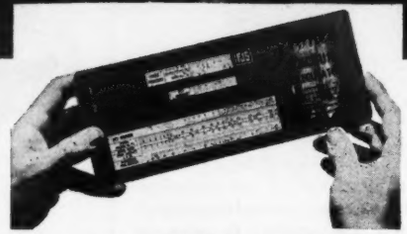
BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION • SAGINAW, MICHIGAN

When inquiring check CP 2991 on handy form, pgs. 2-3



Stokes Microvac Pumps... basic to Vacuum Processing



Send for new Vacuum Calculator for rapid slide-rule calculations. Includes standard ABCD log scale. Also send for Catalog 700, "Stokes Microvac Pumps for High Vacuum," with copious reference material.

High volumetric and mechanical efficiency make these famous pumps economical and reliable units in any vacuum system.

Capacities of Stokes Microvac Pumps run from 15 to 500 cfm . . . pressures to 10 microns absolute. Power consumption is low and the top-mounted motor contributes to compact design requiring minimum floor space.

Lubrication of the four moving parts (including the exhaust valve of corrosion-resistant Teflon) is fully automatic. There are no stuffing-boxes or grease-fittings, and no packing.

Parts are precision-finished, standard and interchangeable. Freedom from wear assures years of trouble-proof service.

Stokes is the only manufacturer of equipment for complete vacuum systems, including Microvac mechanical pumps, oil diffusion pumps, McLeod Gages and Vacuum Valves.

Consult with Stokes on the application of vacuum to drying, freeze-drying, impregnating, extraction, solvent recovery, evaporating, vacuum metallizing, and to other purposes for which vacuum deserves exploration.

F. J. STOKES MACHINE COMPANY,
PHILADELPHIA, PA.

STOKES

STOKES MAKES Plastics Molding Presses / Industrial Tabletting and Powder Metal Presses / Pharmaceutical Equipment / Vacuum Equipment / High Vacuum Pumps and Gages / Special Machinery

When inquiring check CP 2992 on handy form, pgs. 2-3

Briefs . . .

Fluidized solids

Author presents a survey of recent technical developments in this field of unit operations. Lists some present and potential applications. Includes sketches of various reactions and depicts evolution of fluid cracking units. Calls attention to ever-occuring erosion problems. Suggest ways to minimize them. Discusses many processes in which the fluids-solids technique is finding applications. 12 pages, 12 figures, 4 photos. (*"Chemical Engineering", May* '53, *page* 219)

The drying characteristics of china clay

Experimental study to determine mechanism which controls removal of water from china clay. Results are interpreted. "Suction potential" is advanced as explaining part of the mechanism of water removal, apparatus described which was used to determine this force. 17 pages, 16 figures, 3 pages discussion. (*"Transactions of the Institution of Chemical Engineers, London, Vol* 30", *page* 28)

Pulp mill can operate on fuel from waste products

Author states this premise and quotes figures to substantiate claims. Black liquor is examined as a source of heat. Some explanations advanced as to differences in fuel economies in different mills. Sulfate and sulfite mills are subjects of study. 5 pages, 3 figures, 5 tables. (*"Paper Trade Journal", April* 10, '53, *page* 14)

The corrosion engineer uses plastics

"Improvements in the physical properties, application, maintenance, problems and corrosion resistance of these materials have today, it is believed, placed them high on the list of materials for corrosion engineers to consider". Author discusses the physical and chemical properties and the corrosion resistance of the groups of plastic materials. 8 pages, 7 figures. (*"Corrosion", April* '53, *page* 123)

Oxygen determined in gases electrochemically

Theoretical background for the development of the instruments is presented. Latest improved version of continuous oxygen indicator is described in detail as to construction, operation, performance, and maintenance. Produced in ranges 0 to 1% and 0 to 25% oxygen, it has an

Here's a quick look at interesting articles, appearing in other publications . . . as selected by the Editorial Staff of CHEMICAL PROCESSING

accuracy of 2% of full scale. Unaffected by presence of carbon monoxide and up to 24% of carbon dioxide. 5 pages, 10 figures. (*"Analytical Chemistry", April '53, page* 586)

Heat capacity of organic liquids

Authors present a correlation to predict heat capacity of a number of liquids as a function of their parachor and molar refraction values without experimental data. Watson's expansion factor has been extended to relate variation of liquid heat capacities with temperature and pressure. Method for calculating heat capacity shown in an example. Extensive tables of heat capacities as determined and as calculated. 5 pages, 6 tables, 1 figure. (*"Chemical Engineering Progress", April '53, page* 175)

Using radioactivity in petroleum refinery

Paper describes the use of tracer techniques to study the flow characteristics of materials across the trays of a large vacuum distillation column. Tray design stated. Tracers used are indicated and reasons for their selection told. Geiger counter stations are plotted. Graphs show flow lines. 3 pages, 4 figures. (*"Petroleum Processing", April '53, page* 551)

Antioxidants in lubricating greases

Monograph tells of the experimental work and the results secured when polyorgano-siloxanes, organo-silanes and ortho silicate esters were added to special lubricating greases. Greases used as well as antioxidants used are tabulated. Reasons are postulated in explanation of the antioxidant effects of added materials. 17 pages, 14 figures, 2 tables. (*"Naval Research Laboratories", report* 4010)

Nuclear radiation — its detection and measurement

Author outlines the characteristics of six different types of nuclear radiations. Discusses the advantages and disadvantages of eight types of instruments for detecting and counting these radiations and the kinds of electronic circuitry associated with these instruments. 4 pages, 7 figures. (*"ASTM Bulletin", April '53, page* 33)

There's a *simple* way to solve what appears to be a complex speed reduction problem

Get the proper drive combination that best meets your requirements from the broad LINK-BELT line

YOU'LL find your power transmission costs are lowered several ways when you use Link-Belt enclosed gear drives. First, Link-Belt offers a broad range of types and sizes in helical, herringbone and worm gear designs. You get the *one* reducer best suited to your needs.

In addition, Link-Belt builds a complete line of power transmission machinery. Installation and alignment are simplified because dimensions of Link-Belt chains and sprockets, bearings and couplings are all coordinated. And there's no need to call in another firm for any information or assistance.

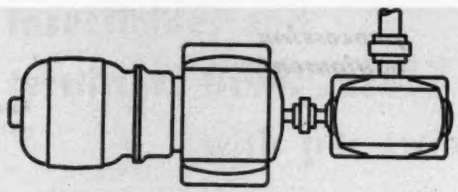
This overall integration—plus the long life built into every piece of Link-Belt equipment—guarantees optimum efficiency. Result: lower power consumption and maintenance costs.

Make the nearby Link-Belt sales office or distributor your power transmission headquarters. Nowhere else can you get the great selectivity that assures you of the best in enclosed gear drive applications.

LINK-BELT

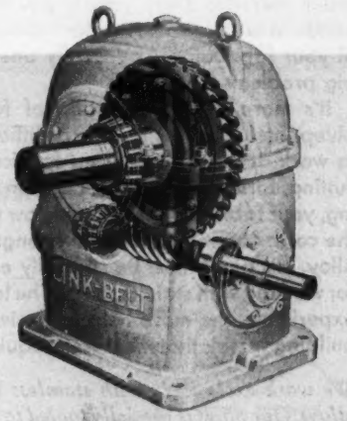
ENCLOSED GEAR DRIVES 13,127

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.



Worm Gear Drive

WORM GEAR and P.I.V. variable speed drives are shown direct-coupled. Link-Belt worm gear drives are available in 3.1:1 to 8000:1 reduction ratios—1400 to 123,000 in. lbs. torque—0.22 to 564 output shaft rpm. Ask for Book 2324A.



Gearmotor & Helical Gear Drive

GEARMOTOR is shown with roller chain drive. Link-Belt Helical Gear Drives, Gearmotors and Motogears are available in 6.2:1 to 292:1 reduction ratios—1 to 30 hp—6 to 280 output shaft rpm. Ask for Books 2247 and 2451.

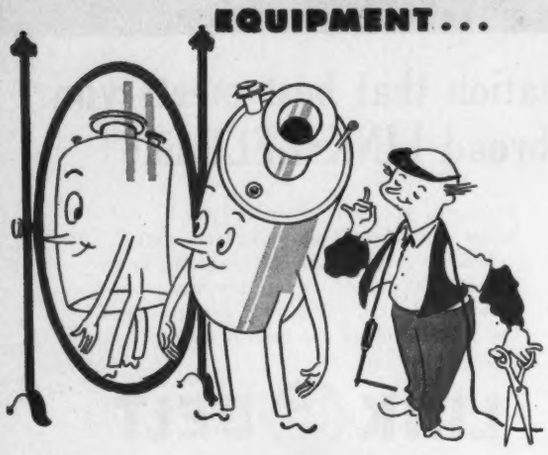
Herringbone Gear Drive

HERRINGBONE GEAR DRIVE is shown connected by flexible coupling to motor and with roller chain takeoff. Link-Belt Herringbone Gear Drives are available in 2.84:1 to 326:1 ratios—0.4 to 2480 hp—2.2 to 623 output shaft rpm. Ask for Book 2519.

When inquiring check CP 2993 on handy form, pgs. 2-3

Custom Built

STAINLESS STEEL EQUIPMENT...



...is ONLY AS GOOD AS ITS FABRICATOR

From the minute you decide on a made-to-order stainless steel vessel, you're in the hands of a fabricator. In fact the selection of your fabricator is generally one of your big problems.

It's more than a question of following blueprints. Stainless steel is a difficult alloy to work. It "acts up" during fabrication. In cutting, forming, welding and even in finishing, your fabricator must know how to guard the corrosion resistance and strength of the alloy. His plant must be specially equipped for working with stainless steel. The longer his experience, the more help he'll give you in building vessels that meet your requirements.

We work exclusively with stainless steel and alloys. Our plant is specially tooled to fabricate this metal. Our engineers and mechanics are particularly trained for the work. Why not consult us when you plan your next stainless steel vessel?

S. BLICKMAN, INC., 708 GREGORY AVE., WEEHAWKEN, N. J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

SEND FOR THIS VALUABLE BOOK

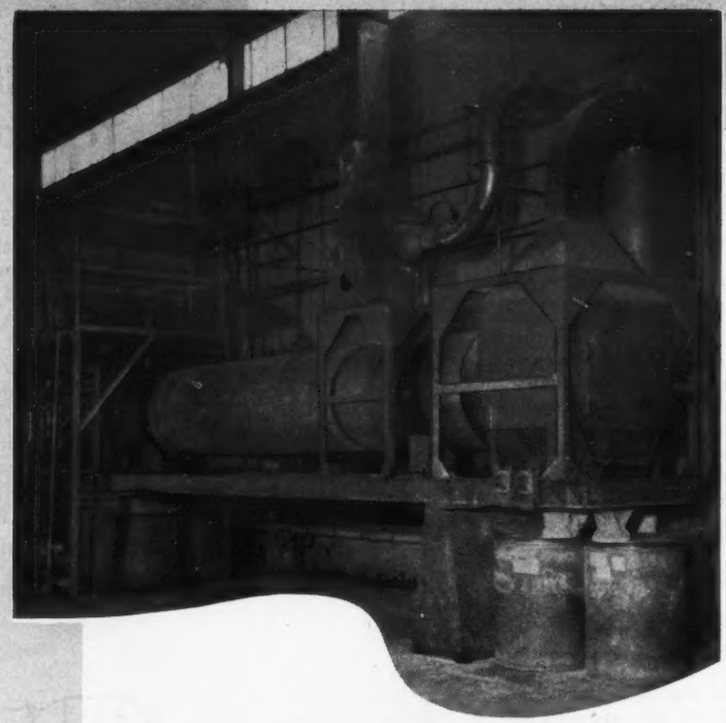
A request on your letterhead will bring our guide, "What to Look For When You Specify Stainless Steel for Your Processing Equipment."

CORROSION RESISTANT PROCESSING EQUIPMENT

TANKS • KETTLES • STILLS • HEAT EXCHANGERS • AGITATORS • MIXERS • TOWERS • PIPING

When inquiring check CP 2994 on handy form, pgs. 2-3

processing equipment



Rotary dryer in use at Norwich Pharmacal not only assures uninterrupted production and maintenance of product purity, but also provides a certain polishing action on the aspirin crystals

Aspirin Uniformity Assured with Rotary Dryer

Norwich Pharmacal maintains low moisture, eliminates scorching and delays, increases capacity, decreases dust and fire hazard, while reducing maintenance and heating costs

PROBLEM: At The Norwich Pharmacal Co. in Norwich, N. Y., the next step in the processing of aspirin after centrifuging involves drying the material containing 3 to 5% moisture down to ½% maximum. Formerly this was accomplished in a 60′ long box-shaped dryer, through which the aspirin moved on a 4′ wide conveyor belt. Heaters were spaced at regular intervals above the belt. The product was fed to the belt by a narrow slot in the bottom of a V-shaped hopper near one end of the unit. This equipment had a number of disadvantages.

In spite of 20 minutes being required for product to go the length of the belt, the moisture did not consistently fall below the ½% maximum limit. An even more serious occurrence was the tendency of the aspirin directly beneath the heaters to burn whenever the dryer stopped for any reason during processing. Operation was dusty and dust stuck

to the aspirin after drying. Some of the material spilled over the edge of the belt, necessitating frequent cleaning of the unit.

In spite of the long 60′ length of the dryer, the slow speed of the belt limited production to 150 to 200 pounds per hour, insufficient to meet expanding requirements. Another disadvantage was the unduly high power costs for the heaters. Also, the close supervision needed, difficulties with the operation, and cleaning problem increased labor costs.

Maintenance was excessive. The belt tended to stretch and had to be repaired. It also frayed on the edges, causing it to catch. Excessive heat on the belt made it fuse. This fact, plus the belt's tendency to become dirty, made replacement necessary two or three times a year. In addition, new heaters had to be installed at similar intervals.

Whenever it was necessary to clean the dryer, it had to be vacuum-cleaned by hand. This was difficult and time consuming. Another dire consequence of the dryer stopping, in addition to burning product, was the increased fire hazard. Since the heaters were only a few inches above the conveyor, the belt could easily catch fire. Plant did have one fire from this source that could have been quite serious.

Another factor that interfered with the processing was the feeding arrangement. Chunks from the centrifuge would not feed through the narrow slot and had to be broken up. Sometimes material would not flow and when it did, it did not deposit evenly on the belt.

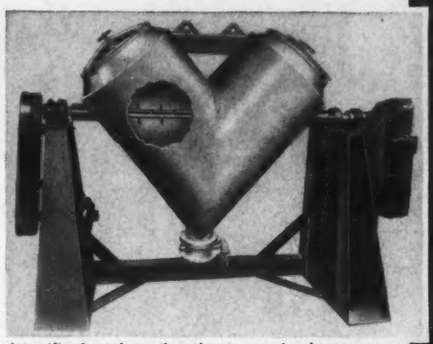
Solution: Approximately one year ago the rotary dryer shown in accompanying photograph was acquired and placed in operation. This unit, 20′ long and 2½′ in diameter, has a stainless steel shell, all parts in contact with the product being of this material. It rotates at an adjustable speed of 3 to 9 rpm. Present rotational speed at Norwich is 7 rpm. Inside the dryer, flights 10″ long and projecting 3″ into the dryer with a 1″ lip, are placed in a staggered arrangement. As the dryer rotates, these flights lift the product to the uppermost point of the shell and drop it across the open space.

Incoming air is warmed by steam coils and pulled through the space in dryer through which the crystals are falling by a fan above the right end of unit. The fan pulls the air through a cyclone dust collector and exhausts it to the roof. Air flow is parallel to the movement of product through the unit. Incoming temperature of air is about 100°F and outgoing temperature is approximately 80°F. Volume of air through dryer is 500 cfm.

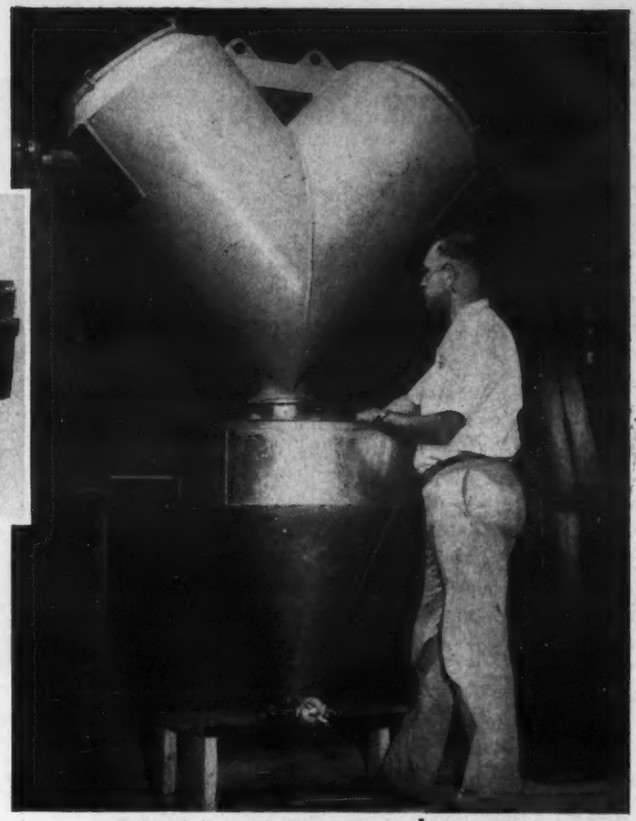
Material is fed into dryer by first placing it into large hopper shown at upper left in illustration. From the large hopper, product falls into the smaller hopper of a vibrator feeder, which can be set for desired rate of flow of material into dryer.

At the right end of shell, the dried material drops through a screen into drums below, as shown in

(*Continued on page* 127)



Intensifier bar, shown through cut-away, breaks up any lumps that may have formed in the raw materials.



Photograph shows quick, easy unloading of p-k twin shell blender into special bag filling hopper, permitting further blending to proceed while bags are filled.

Insecticides and fertilizers *COMPLETELY BLENDED* with p-k twin shell blenders

Field strength insecticide dusts and fertilizers, scientifically compounded for greater effectiveness, must be completely blended for accurate dispersion of the several ingredients.

One progressive manufacturer of fertilizers in Pennsylvania, produces completely dispersed blends of horticultural fertilizers with *one* piece of equipment—a p-k 10-cu. ft. twin shell dry blender, equipped with removable intensifier bar which breaks up lumps in raw materials which develop in transit. This small company finds the p-k blender does their entire blending job—better, faster, more economically.

Blending of a full load is done in 5 to 8 minutes. Complete cleaning is quickly done, merely by flushing down the blender shell. In all, this company blends 40 different formulations.

Small operations or large process applications are all within the capabilities of p-k twin shell dry blenders, available in sizes from 4- and 8-qt. laboratory models to 75-cubic foot models with intensifier bar, to 250 cubic foot, without intensifier bar, for production line use.

When your process planning includes a blending operation, it will pay you to ask p-k for blending tests on your materials and for engineering assistance at the initial planning stage. Since p-k also makes double-cone and ribbon blenders, an unbiased analysis of your blending methods is assured. Or, write for factual literature—Catalog No. 12.

the Patterson-Kelley Co., inc.

780 Lackawanna Ave., East Stroudsburg, Penn.

Patented and patents pending

© 1972

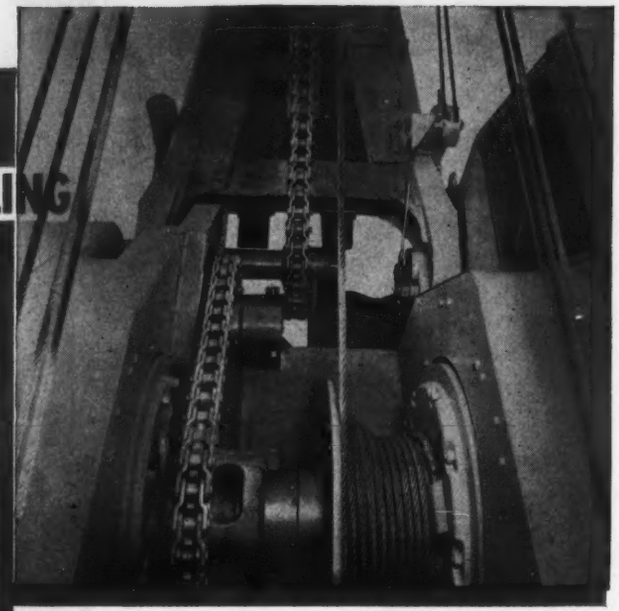
101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 2995 on handy form, pgs. 2-3

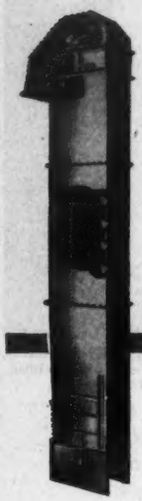
just a few Jeffrey products . . .

FOR IMPROVING HANDLING AND PROCESSING

Space does not permit a complete showing of all the products in the broad Jeffrey line. A few are displayed here to give you an idea — our NEW Catalog No. 418 goes into more detail. It will prove a handy reference if you are interested in improving handling, processing and reducing operations in your plant. Send for your copy TODAY.

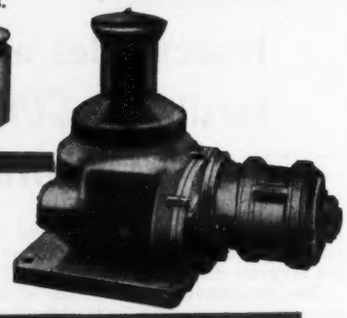


Above: A complete line of Chains and Transmission Machinery . . . bearings, idlers, traction wheels, take-ups, sprockets, gears, hub boxes, couplings, etc.



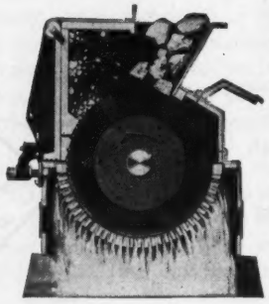
BUCKET ELEVATORS—standardized to save you time and money. A type and size, buckets mounted on belt or chain, to give your material a lift . . . to keep production moving in a way that spells more profit for you.

Below: Jeffrey-Traylor Barrel Packer. Cuts shipping costs—reduces size of container as well as increases its capacity. Also electric vibrating Packing Tables, Feeders, Conveyors, Dryers and Coolers.

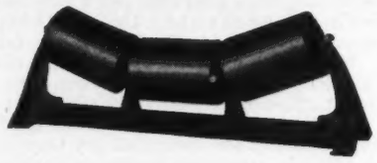


CAR PULLERS—two sizes for moving from one to six cars. Save time and expense. No locomotive needed.

PULVERIZERS AND CRUSHERS—Rigid or swing hammer, single or double roll, FLEXTOOTH or Rotary Ring types to provide uniform reduction with a minimum of fines. Reduce coal, limestone, gypsum, pulp lap, garbage, metal turnings, alum, chips, sewage screenings, sugar cane, to desired fineness the Jeffrey way.



BELT IDLERS—furnished in both troughing and flat belt types for belt widths from 14" to 60". Idlers are of the anti-friction type, insuring low power cost and smooth performance.



THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

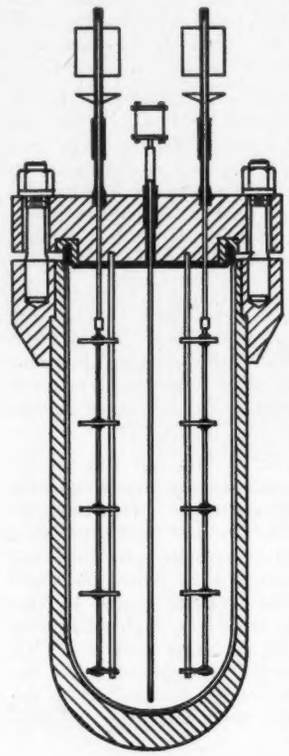
IF IT'S MINED, PROCESSED OR MOVED . . . IT'S A JOB FOR JEFFREY!

When inquiring check CP 2996 on handy form, pgs. 2-3

Capacities up to 265 gallons are available in magnetic agitator autoclave . . .

units are designed for pressures up to 5000 psi at temperatures as high as 350°C

Uses: The autoclaves are used in industrial production as well as in pilot plants in Germany and other European countries, introduction into the United States just starting. Units are used particularly in pharmaceuticals, oil, plastics, rubber, and dyestuffs. Specific applications are hydrogenation of compounds, oxidation processes, polymerization, catalytic processes, and other chemical reactions. They are especially adaptable where leakage would involve special risks in the process, and in work where use of oxygen is required.



Magnetic agitator autoclave of 265 gallon capacity, with four stirrers

Features: Supplementing the smaller sizes previously available, units can now be obtained in capacities as large as 265 gallons (1000 liters), making them applicable for many plant processes. These large capacity units are designed to withstand pressures up to 5000 psi (350 atm) and temperatures as high as 350°C. Since autoclave does not have a stuffing box, the inherent defects of this type of construction are eliminated. For example, contamination from oil lubrication is excluded.

Description: As shown in accompanying photograph, the magnetic agitator autoclave is operated by means of magnets and soft iron cores. Agitator blades are drawn upwards by means of periodic energizing of the magnets.

In some of the units, where the chemical has a high viscosity, special magnets are also built into the bottom of the vessel in order to force the agitator down with additional mechanical energy for a higher stirring efficacy.

The autoclave shown in photograph is a 265 gallon unit designed for 5000 psi and 350°C. It has four magnetic stirrers. Several other models are available. Another type has three vertical stirrers, has 132 gallons capacity, and is built to withstand 365 psi at 150°C. A third style has five agitators entering vessel

from the side. This unit has 212 gallons capacity and will resist 4400 psi at 300°C.

(Manufactured by Andreas Hofer (West Germany), and distributed in US by Chemtech Products Corp., Dept. CP, 801 Second Ave., New York 17, N. Y. . . . or reader may secure more information by simply checking CP 2998 on handy Reader Service slip between pages two and three.)

Aspirin Uniformity

(*Continued from page* 125)

photograph. The larger part of this material is used directly in granulations for compression into aspirin tablets. Some of it is sifted to obtain certain cuts as specified by customers.

Results: Since the rotary dryer has been in operation, the material is easily maintained at a uniformly low moisture well below the upper limit of ½%, usually being down around 0.1%. Possibility of the product being scorched has been eliminated. Also the general operation and design of the dryer makes it easy to obtain the cleanliness and purity so necessary in a pharmaceutical product. Dust is no longer a problem. In fact, the way in which the material falls from the flights as the shell rotates tends to dislodge dust from the crystals, providing somewhat of a polishing action.

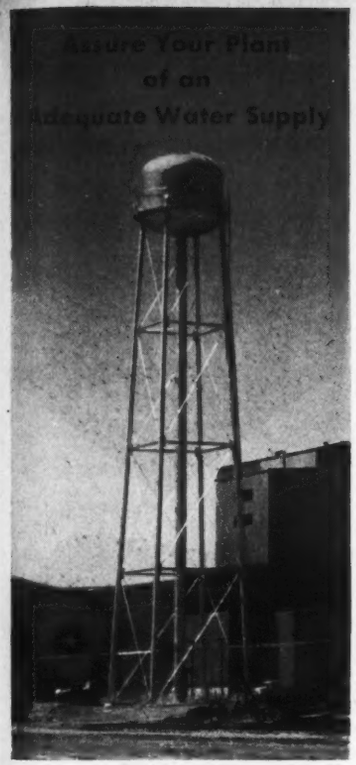
The present equipment also furnishes the added drying capacity required. It is being operated at 250 lb per hour but has a capacity of up to 500 lb per hour, allowing plenty of room for further increases in production. Delays in production are a thing of the past.

Maintenance on the dryer has been practically nil. All that has been necessary is lubrication and routine inspections. No replacement parts have been needed. Excessive power costs have been eliminated, the present heating source being low pressure steam that is readily available from plant header without adding much to total consumption. Labor costs have been reduced by ten per cent or more.

Dryer is easy to clean when that is necessary. All that is required is to wash it out with hot water or with steam, no handwork being required. Fire hazard has been greatly reduced. Method of feeding material into dryer provides smooth, uniform flow with no plugging.

(Vibratory feeder used in conjunction with dryer is product of Syntron Co., Dept. CP, 110 Lexington Ave., Homer City, Pa. . . . or for more information check CP 2999 on handy Reader Service slip between pages 2 and 3.)

(Rotary dryer used at Norwich Pharmacal is product of General American Transportation Corp., Louisville Drying Machinery Unit, Dept. CP, 139 S. Fourth St., Louisville 2, Ky. . . . or check CP 2999A on handy Reader Service slip between pages 2 & 3.)



AT ALL TIMES!

Assure your plant of an independent, adequate water supply at all times by installing a Horton* elevated tank. Water under gravity pressure from the tank is available 24 hours a day for fire protection and general plant needs.

Horton elevated tanks for industrial service are built in standard capacities with ellipsoidal-bottoms from 15,000 to 500,000 gallons. Larger capacities are available with radial-cone bottoms. For information or quotations, please write our nearest office. There is no obligation on your part.

*Trade Mark Registered in U. S. Patent Office

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 ..... 2107 Healey Bldg.
Birmingham 1 ..... 1533 North Fiftieth St.
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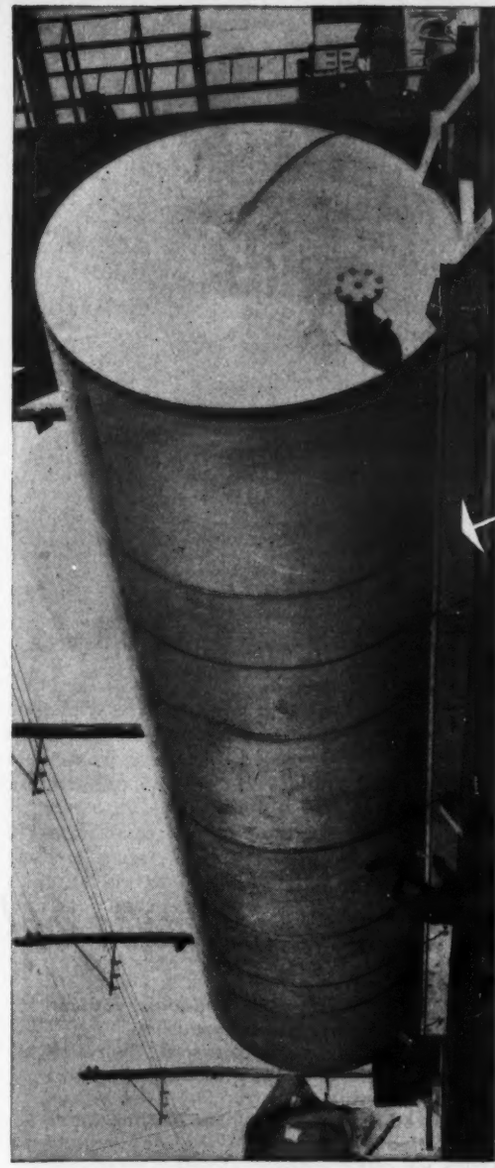
Detroit 26 ..... 1535 Lafayette Bldg.
Houston 2 ..... 2151 C & I Life Bldg.
Los Angeles 17 . 1536 General Petroleum Bldg.
New York 6 ..... 3314-165 Broadway Bldg.
Philadelphia 3 .. 1650-1700 Walnut St. Bldg.
Pittsburgh 19 ..... 3208 Alcoa Bldg.
San Francisco 4 ..... 1545-200 Bush St.
Seattle 1 ..... 1307 Henry Bldg.
Tulsa 3 ..... 1649 Hunt Bldg.

When inquiring check CP 2997 on handy form, pgs. 2-3



it's so **BIG** we flipped the photo

A RIGHT TURN of the page and you'll see why. It's 36 feet long · 9 foot diameter it's type 304 stainless steel and it's designed for storage of chemicals. It's an example of BRIGHTON'S capacity to build *BIG* and to build *RIGHT!* Brighton is one of the nation's leading suppliers of all types and sizes of chemical process equipment.

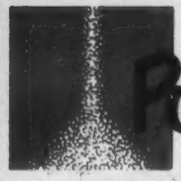
If you would like to know more about Brighton and how you can get more for your money in chemical process equipment .. write Dept. D for comprehensive bulletins.

BRIGHTON copper works inc.
820 state ave • cincinnati 4 • ohio

DIVISIONS: F. C. DECKEBACH SONS CO., HAMILTON COPPER & BRASS WORKS, BUCYRUS KETTLE WORKS

est. 1914 • engineers • metalsmiths • machinists • designers producers of chemical processing equipment

When inquiring check CP 3000 on handy form, pgs. 2-3

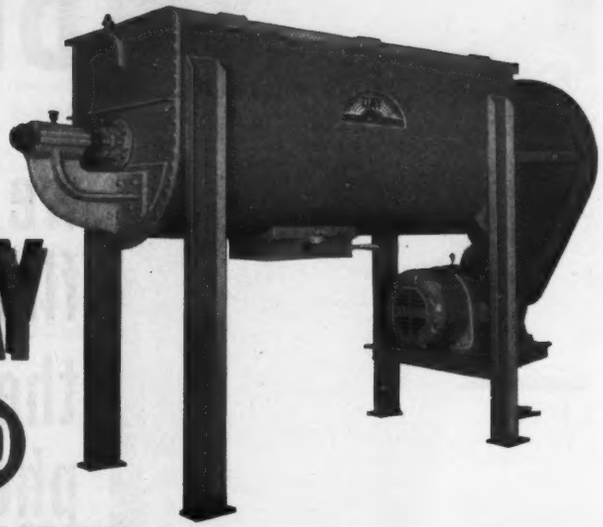


Powders

Pastes

or

Liquids



DAY

D-10

BLENDER *does a finer, faster job!*

Whether you work with powders, pastes or liquids, you can depend on a DAY D-10 BLENDER to boost production. Scientifically designed agitators insure constant, thorough blending action. Sturdy outboard bearings provide ample support for the agitator shaft, remain free from abrasive action by the material being mixed and also eliminate bearing loads on the stuffing boxes. Heavy-duty design includes a rigid frame that is free from vibration, plain or stainless steel tank and a geared head motor with roller chain drive. Discharge at center or either end is optional. Available with Spiral Ribbon Agitator for paste, semi-paste, granular or liquid products.

DRY COLOR AGITATOR

Optional, supplied when necessary for materials such as heavy-bodied powders.

Call your J. H. Day Sales Engineer or write for details. The J. H. Day Co., Inc., 1143-A Harrison Ave., Cincinnati 22, Ohio.

DAY

THE J. H. DAY COMPANY, CINCINNATI 22, OHIO

INCORPORATED - FOUNDED 1887

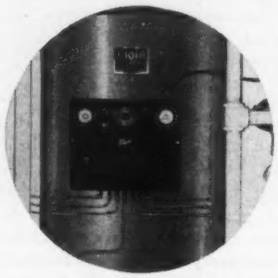
When inquiring check CP 3001 on handy form, pgs. 2-3

Each step in regeneration of zeolite is controlled independently . . .

pilot-operated hydraulic valves of automatic water softener cause little pressure drop

Independent adjustment and control of each step in the regeneration cycle is an important feature of line of water softeners. This makes it possible to regulate the duration and flow rate of each step — backwashing, brining, and rinsing — to best suit the characteristics of the particular zeolite which is in use at the time.

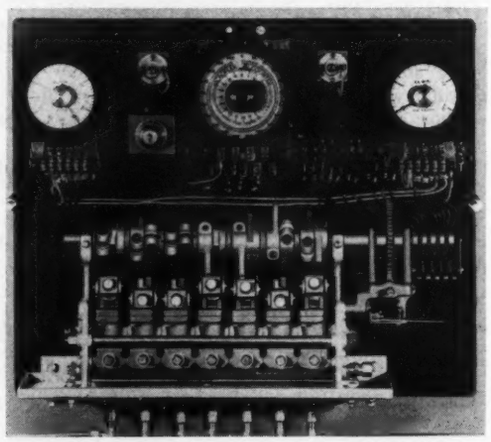
Probably just as important is the fact that power failure during regeneration will not disrupt the sequence of operation, so resetting is unnecessary. When power resumes, the softener will complete its cycle without attention.



Automatic softener with compact control panel

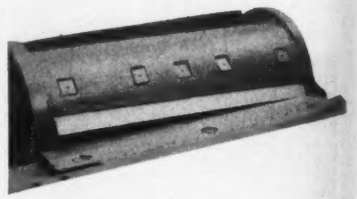
Automatic control panel contains timers and meters, plus small pilot valves which are opened and closed by the action of a single rotary cam shaft. Shaft is motor-driven, and its action is controlled to regulate the steps of regeneration. The pilot valves actuate the hydraulic valves in the lines, as indicated by accompanying drawing. The pilot-operated valves are installed on straight runs of pipe to form a good piping pattern which shows a low pressure loss as compared to complicated patterns which are often used.

Regeneration cycle is started by one of three methods: 1) meter contact when specified gallonage of



Control panel with cover removed. Shows how cams trip pilot valve levers so that pilot valves operate hydraulic valves in proper sequence. Duration of backwash and rinse are set by outer dials. Setting of center dial controls gallonage of soft water delivered per regeneration

SHEARING ACTION of this CUTTER May Solve YOUR CUTTING PROBLEM



Knives on the revolving cylinder of the cutting element of our cutters engage the bed knife at an angle, dictated by our long experience in cutting materials of various characteristics.

As a result, the full power of the moving blades is concentrated at a single point, progressively along the length of the bed knife.

•

Let us demonstrate this shearing feature to you on a sample of the material you have to cut.

•

TAYLOR-STILES CUTTERS include machines that will cut sheet stock into uniform pieces of predetermined size and shapes, continuous strips or fibers into uniform lengths, and many other materials in various ways required for processing.

TAYLOR-STILES and Company

CUTTING MACHINES & KNIVES

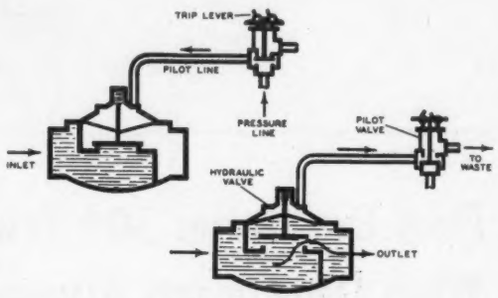
20 Bridge Street

Riegelsville, New Jersey

When inquiring check CP 3002 on handy form, pgs. 2-3

soft water has been delivered, 2) time clock, or 3) push-button. This closes the "service" valves and opens the "backwash" valves. Any required duration and rate of backwash flow can be secured by simple adjustments. Duration is set on dial, calibrated in minutes, on control panel, while rate of flow is adjusted by manufacturer's backwash regulator. In addition, opening and closing rates of the hydraulic valves are adjustable, and the danger of sudden surges is eliminated.

Softener is then brined by automatic opening of the hydraulically operated brine draw valve. When cor-



Operation of valves is revealed here

rect amount of brine has been drawn, the valve closes automatically, and the brine tank is refilled to the desired level.

The rinsing step then begins, but this is really divided into two automatic operations: a slow rinse followed by a fast rinse. The slow rinse permits the zeolite to be exposed far longer to a more concentrated salt solution, while the fast rinse cleans out all traces of brine. Total rinse time is no longer, however, than is usually the case with customary rinse procedure.

Both the time span and flow rate of the slow rinse can be controlled independently to conform to type of zeolite and size of softener. By means of the timer, any duration of slow rinse can be secured. Any rinse rate desired is provided by a pressure regulating valve and a flow control valve arrangement.

Existing softeners may be readily converted to this type of automatic operation.

(Announced by Elgin Softener Corporation, Dept. CP, Elgin, Ill. . . . or for more information check CP 3004 on handy form, pages 2 and 3.)

Short but full story of demineralizer

Concise and complete resume of all essential information concerning 90-gph (nominal) mixed-bed demineralizer is provided in 2-page catalog sheet. Front of sheet contains photo and schematic diagram of unit, while specifications and performance data are presented on the back. Model M-100 Cat Sheet is issued by Penfield Manufacturing Co., Inc., Dept. CP, 19 High School Ave., Meriden, Conn. When inquiring specify CP 3005 on handy form, pages 2 and 3.

BAMAG

NITRIC ACID MANUFACTURERS

Would you consider a yearly saving in operating costs in excess of $100,000?

Then be sure to consult GIDCO concerning the BAMAG nitric acid process before making a decision on your new plant.

BAMAG OFFERS:

1. **Ammonia conversion at atmospheric pressure for higher yields and lower catalyst losses**
2. **Absorption with or without pressure as required**
3. **Energy recovery in steam and tailgas turbines**
4. **Simple and automatic operation**

Consult without obligation

GENERAL INDUSTRIAL DEVELOPMENT CORP.

270 Park Ave., New York 17, N. Y.

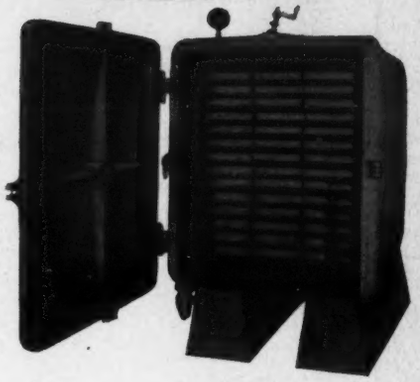
BAMAG-MEGUIN
ARTIENGESELSCHAFT
270 PARK AVE. • NEW YORK 17, N. Y.

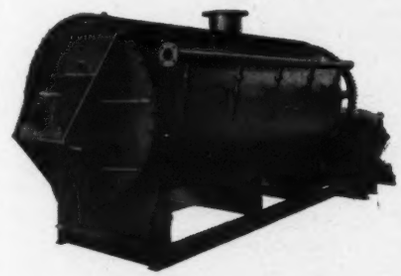
When inquring check CP 3003 on handy form, pgs. 2-3

Dry it Faster, Better, with
Devine VACUUM DRYERS
POSITIVE CONTROL PERFECT UNIFORMITY

VACUUM CHAMBER DRYER

Devine Vacuum Chamber Dryers are designed to dry drugs, foods, chemicals and other materials that must not be subjected to high heat, or agitated or broken while drying. Material is dried on heated shelves under vacuum. Heat and vacuum can be regulated, providing positive control of drying process. Available in either cast iron or fabricated steel.





VACUUM ROTARY DRYER

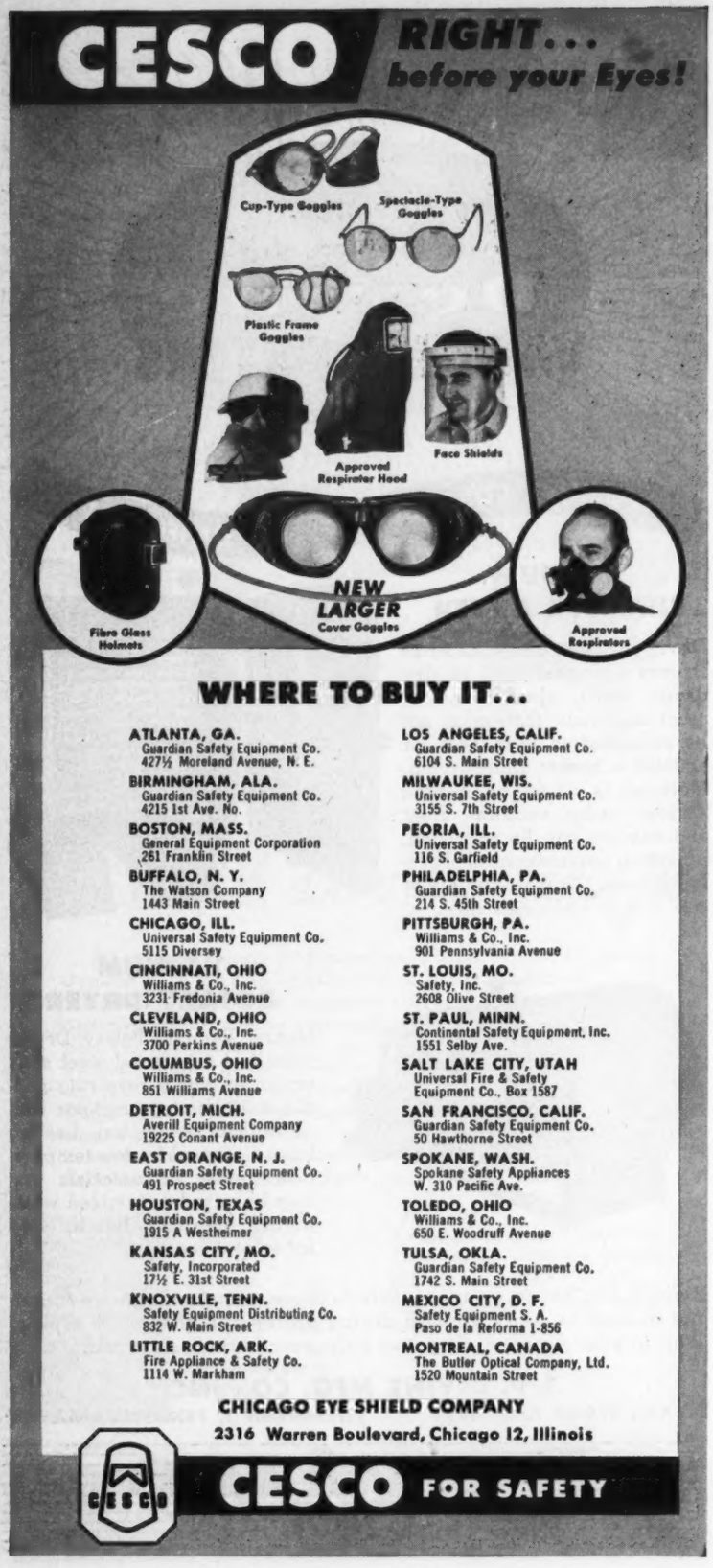
Devine Vacuum Rotary Dryers consist of a jacketed steel shell equipped with a revolving paddle or ribbon-type agitator with or without a central heating tube. Designed for low-temperature drying of materials that may be mixed or tumbled while drying, they may also be used for solvent recovery

Devine Engineers, as specialists in drying equipment, have found the answer to many a tough drying problem. If there is a drying step in your process, they can help you. Inquiries invited.

J. P. DEVINE MFG. CO., INC.
49th STREET AND AVRR PITTSBURGH 1, PENNSYLVANIA

Devine
PROCESS EQUIPMENT

When inquiring check CP 3006 on handy form, pgs. 2-3



When inquiring check CP 3007 on handy form, pgs. 2-3

Plant Experiences 30% Fewer Fires When Departments Assume Fire-Fighting Responsibility

Supervisor charged with directing activities of fire brigade in the event of a mishap

PROBLEM: Coal chemicals, coke, agricultural chemicals, pig iron, cement, protective coatings, plasticizers, activated carbons and concrete pipe are the major items of manufacture of Pittsburgh Coke & Chemical Co.'s plant at Neville Island, Pa. The diversity of manufacturing carried on — steel-making operations to synthetic organic chemicals — makes the safety problem a particularly challenging one. Because of the uniqueness of the situation, the Safety Department at Neville Island realized that plant-wide attacks on some aspect of safety problems might not prove as efficacious here as in a plant involved with but one or two products or manufacturing procedures.

The situation with respect to fires, in particular, was one which appeared as though it would lend itself to improvement if attacked on a departmental level.

The plant has a stand-by fire brigade composed of employes from several different departments. It receives training in the handling and use of fire apparatus — on company time and at a time and one-half rate. However, drawn as they are from a number of different departments, members of the fire brigade could not be expected to know all the factors involved in a local fire situation:— arrangement of processing equipment; location of doors, windows, escapeways, etc.; steam, water and air lines; etc. Thus, when called into action, the brigade was faced on occasion with difficult situations because of this diversity of and in manufacturing departments at Neville Island.

In addition to the above situation, another one relating to the fire problem concerned the use of fire extinguishers and apparatus at plant-site locations. Previously, no individual was charged with the responsibility for turning in a report when equipment was used. This led to indiscriminate use of fire equipment with its attendant consequences:— additional maintenance of equipment, higher replacement costs, some apparatus not serviced immediately for next emergency, etc.

Furthermore, although there was no

negligible fire damage or loss in many cases, an accurate view of the fire problem was difficult to obtain. Also, planning any program for improvement was not feasible under the circumstances.

Solution: In meeting the first problem, a division of responsibility was established. The supervisor of each department is charged with directing fire-fighting activities on the premises of his own department. The fire brigade, on the other hand, carries out the actual fire-fighting function. Thus, the individual who is in a position to know most about the physical layout of a hazardous site is in charge of meeting with an emergency situation.

An even more important advantage is realized from this arrangement. Because the supervisor must meet and cope with any mishap, it behooves him to do his utmost in preventing them.

The second problem was met by making that individual who uses a piece of fire apparatus turn in a fire report each time. Realizing that this is the case, the individual employe is no longer prone to grab and use a fire extinguisher without sufficiently good reason.

Results: A 30% reduction in fires has been achieved by the Neville Island plant in the years 1951 to 1952 — 67 fires in 1951 as against 47 in 1952. Greater cooperation has been received from the supervisors in safety undertakings because of their responsibility for local situations and conditions.

Fire extinguishers and other apparatus are maintained and serviced more rapidly. It has been possible to more accurately pin-point trouble spots through analysis of the fire reports.

(Information received through courtesy of Pittsburgh Coke & Chemical Co., Dept. CP, Neville Island, Pittsburgh 25, Pa.)

Will operate automatically to set off alarm or manually . . .

unit is simply constructed with no moving parts to wear or get out of order

Uses: Fire alarm.

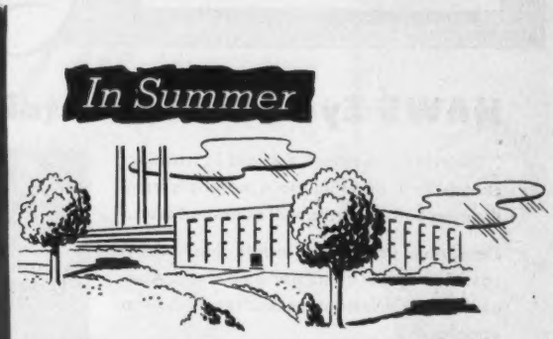
Features: Simply constructed with no moving parts to wear or get out of order causing loss of efficiency.

Description: Sentinel fire alarm is constructed so as to operate both manually or automatically. For manual operation, it is only necessary to use the hammer provided to break the glass covering. This releases the pressure on a spring and electrical contact is made which sounds an alarm. In automatic operation, when the heat from a fire reaches approximately 165° it melts a drop of soft solder that holds the rim of the glass covering. This action frees the glass and rim and causes the electrical contact to be made as before.

(Manufactured by The Faith Co., Dept. CP, 434 So. 57th St., Philadelphia 43, Pa. . . . or for more information check CP 3008 on handy form, pages 2 & 3.)

CLARAGE *Multitherm* AIR CONDITIONING UNITS

THEY HEAT AND HUMIDIFY



THEY COOL AND DEHUMIDIFY

. . . . year-'round comfort at low cost

Clarage Multitherm Conditioning Units are double duty machines. They keep your place cool and dehumidified in summer. They heat and humidify in the wintertime.

You save considerable in cost by having the same equipment working for you the year-'round . . . and every day you're assured of comfortable working conditions.

Multitherm Units come in vertical and horizontal types as shown—ten sizes—capacities 600 to 20,500 c.f.m. You use a direct expansion refrigerant, cold water or brine for cooling; steam or hot water for heating.

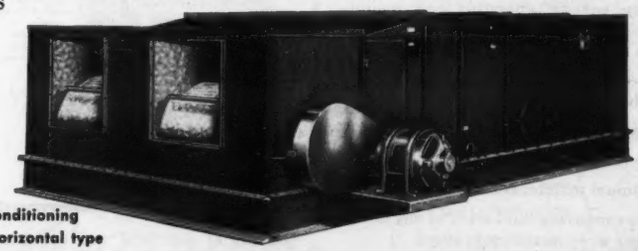
Multitherm Conditioning Unit—vertical type

. . . . or process conditioning

Aside from comfort applications in offices, plants, stores, etc., Multitherm Units are widely used in industry where production depends upon a certain temperature and humidity. Clarage Capillary Conditioners are available for cases where extremely close control is needed to meet requirements.

We welcome your inquiry for any desired information.

CLARAGE FAN COMPANY
Kalamazoo, Mich.



Capillary Conditioning Unit—horizontal type

You can Rely on . . .

CLARAGE

Headquarters for Air Handling and Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA Canada Fans, Ltd., 4285 Richelieu St. Montreal

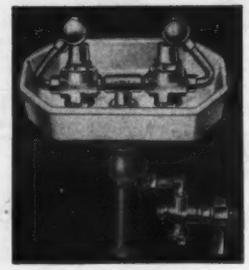
When inquiring check CP 3009 on handy form, pgs. 2-3

HAWS Eye-Wash Fountains

... provide immediate first-aid in washing chemicals or other injurious materials from the eyes *before permanent damage occurs.*

The simple, economical installation usually costs but a few cents per employee. Also available with instantaneous drench-shower attachment.

Planned, tested and approved by leading Safety Engineers.



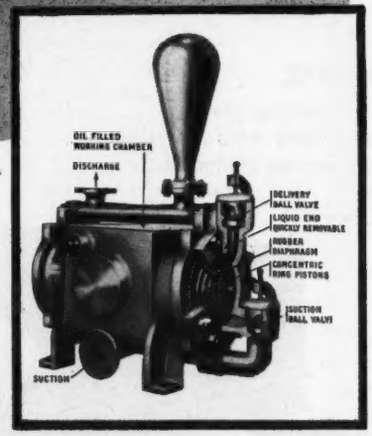
• Ask your Plumbing Contractor or write, today, for detailed descriptive literature

HAWS DRINKING FAUCET CO.
1439 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA
Agents and Sales Representatives in All Principal Cities

When inquiring check CP 3010 on handy form, pgs. 2-3

Handle Any Fluid Economically

no matter how
corrosive • abrasive
thick • heavy
viscous



Details of one fluid end: working mechanism completely separated by rubber diaphragms from the fluid handled.

Install the pumps that can really "take it." Save on over-all operating and maintenance costs. Here's why Shriver Diaphragm Pumps last longer —

- No contact between fluid handled and mechanical parts of pump.
- No packings, hence no leakage.
- Easy to inspect and clean.
- Minimum maintenance cost.
- Parts contacting fluid made of any metal, rubber or synthetic resin lined.
- Ample pressure; wide capacity range.

Bulletin 137 tells the story. Write.

Shriver Diaphragm Pumps

T. SHRIVER & CO., Inc. 846 Hamilton St. · Harrison, N. J.
Filter Presses · Filter Media · Diaphragm Pumps

When inquiring check CP 3011 on handy form, pgs. 2-3

Respirator facepiece is lightweight, compact . . .

aluminum formable by hand to fit face contour

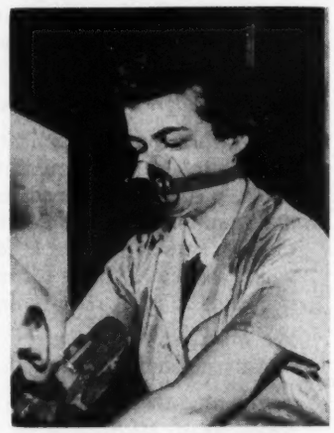
Uses: Designed to protect wearer against nuisance concentrations of organic vapors and acid gases.

Features: Long service life as all seven parts are independently replaceable — one element, worn out after extended service, doesn't mean that the whole respirator need be replaced.

Lightweight, compact facepiece, of formable aluminum, is easily shaped by hand to fit the face contour. This feature, along with the soft sponge-rubber facepiece cushion, assures an excellent face seal without uncomfortable pressure.

Description: Gasfoe respirator has a plastic cartridge which contains treated charcoal fill. An auxiliary overlay screen keeps paint globules out of the cartridge. A package of these auxiliary screens is provided with the respirator packed in metal container.

Because of its compact design, the Gasfoe is said to eliminate "blind spots" for the wearer and prevent the closed-in feeling which workers



Aluminum facepiece is easily shaped by hand to fit the face

frequently complain of in making excuses for not wearing respirators. There are no distracting corners and edges.

(Gasfoe respirators can be obtained from Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 3012 on handy form, pgs. 2 & 3.)

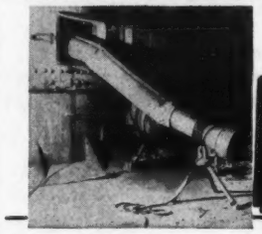
Drive out
FOUL AIR
Blow in
FRESH AIR
with Coppus Type A Ventilator

Assure greater safety, comfort for workers . . . get greater efficiency.

Drive out dangerous fumes, gases, stagnant or hot air from boilers, cable manholes, tanks, vats and other confined places. *Supply fresh air continuously.*

Send now for further information. Coppus Engineering Corporation, 388 Park Avenue, Worcester 2, Mass.

MANHOLES made safe for workers' entrance within minutes.



BOILER AND TANK INTERIORS cooled by Coppus. Fresh air supplied continuously.

ANOTHER COPPUS "BLUE RIBBON" PRODUCT

When inquiring check CP 3013 on handy form, pgs. 2-3

TRI-LOK safety steps

"A STRONG STEP TO SAFETY"

Each Tri-Lok step consists of a panel of Rectangular, Diagonal, or U-type Tri-Lok flooring in any desired width, length, depth, and bar spacing.

SAFE—checker plate nosing bars make each step stand out clearly. Abrasive edging also available.

CLEAN—clogless, rivetless Tri-Lok joint prevents accumulation of dirt, moisture, rust.

STRONG—added strength provided at maximum load contact by shape and rigidity of nosing bar.

Write today for bulletin PL-1103

DRAVO CORPORATION
National Distributor for the Tri-Lok Company
Dravo Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities

When inquiring check CP 3014 on handy form, pgs. 2-3

For greater
CHEMICAL RESISTANCE

54-40 apron with patch
54-30 apron without patch
in many sizes

insist on APRONS
by Sawyer

Highly resistant to acids, alkalis, oils, greases and other chemicals. Not affected by gasoline or most solvents.
Easy to clean — can be scrubbed in hot water or caustic solutions — or dry cleaned — positively will not crack, blister or peel.
100% waterproof — made with top quality base fabric saturation-coated first and then coated with 6 coats of Neoprene Latex.*
Tough as mule-hide — wear like iron, take endless snagging, rubbing, scraping, and still give full protection.

Also: Industrial suits, three-quarter and long coats, coveralls, and many other styles. All clothing made in black and yellow.

**Sawyer fabrics are coated by The Brunsene Company, a division of*

THE H. M. SAWYER & SON CO.
FROG BRAND
CAMBRIDGE
MASSACHUSETTS

When inquiring check CP 3015 on handy form, pgs. 2-3

CO_2 rapidly extinguishes fires in two similar type mixing operations . . .

in both cases, flash fire occurred as tank containing solvent was being loaded with solids

Case No. 1

A mixing tank caught fire at a laboratory. According to a report, the fire occurred as the tank, which contained lacquer thinner, was being loaded with rosin. How the fire actually started was not actually ascertained. Here are some of the incidents, however, surrounding the accident.

Employe in charge of the operation was loading the mixing tank for a batch. He was charging the rosin from a metal drum. Normally, this container rests on a wooden frame in the dumping process. *There is question if this was so when the fire occurred.* There was a flash and the operator jumped off the tank loading platform. A combined heat-detector and CO_2 fire extinguishing system* went off and quickly extinguished the blaze. Materials around the tank resulting from spillage kept burning after the fire was out. Two 20-lb portables and a 75-lb wheeled unit were used on this fire.

Case No. 2

As in the case cited above, a flash fire occurred here during the charging operation of a mixing tank. Two men working on the operation were badly burned and hospitalized. Sequence of events follow.

One of a battery of lacquer mixing tanks was being charged with a plastic material. Latter is handled in paper bags which have to be lifted to top of mixing tank platform by a lift truck. The tank already contained the solvent. The plastic is emptied by two men holding the paper bag from which one end has been torn. As the dry powder plastic, in this instance, was poured into the tank there was a sudden flash and accompanying loud report.

An automatic CO_2 system* discharged immediately, and the two men who were burned by the flash jumped from the platform and ran from the building. One bag partly burned was found lying on the platform, and another empty bag, which was on fire, fell and was extinguished with a portable extinguisher.

(*Lux-O-Matic is name of system in Case #1 and CO_2 system in Case #2 is a Lowe. Both are manufactured by Walter Kidde & Company, Inc., Dept. CP, Belleville 9, N. J. . . . or for more information check CP 3016 on handy form, pages 2 and 3.)

Booklet asks if protective devices are really protecting

Twelve-page, illustrated booklet describes in detail how to be sure your current actuated protective devices are really protecting.

Booklet "Do Your Protective Devices Really Protect?" is available from Multi-Amp Corp., Dept. CP, 121 Cross St., Harrison, N. J. When inquiring specify CP 3017 on handy form, pages 2 and 3.

Terrific! is the word for

"Automatic" SPRAY Sprinklers

TERRIFIC . . . That's the word that chemical processors use in describing the new "Automatic" SPRAY Sprinkler.
It's a "Sure Fire Killer", designed for quick action and maximum effective distribution of water.

Property owners get protection-PLUS in all types of buildings with this vastly improved fire fighter that can be installed on both exposed and concealed piping systems. And . . . "Automatic" SPRAY Sprinklers are easily interchangeable with obsolete devices . . . cost no more than old style sprinklers.

This important advancement in the science of fire safety is further reason why "Automatic" Sprinkler is universally recognized as FIRST IN FIRE PROTECTION!

New literature available on request

"Automatic" Sprinkler

CORPORATION OF AMERICA · YOUNGSTOWN, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 3018 on handy form, pgs. 2-3

He scoffed at safety breathing equipment . . .

. . but he finished the job wearing a Scott Air-Pak

(TRADE MARK)

"Scott Air-Pak GIVES ME PLENTY OF AIR, KEEPS ME FEELING COOL INSIDE HOT TANKS!"

An Eastern dye plant needed a painting job done on the inside of a large tank. Although the paint was of a particularly obnoxious compound, the man hired for the job scoffed at the offer of safety breathing equipment. He entered the tank, only to stay inside for six minutes. Making a second attempt to paint the interior without protection, he lasted only one-half minute. The third time he put on a SCOTT AIR-PAK with a hose attached to an air cylinder and stayed in the tank for *three hours*, completing the entire job. Questioned as to SCOTT AIR-PAK's operation, he said "I never knew that working inside of a hot tank could be so cool and comfortable — and safe. I'm taking no more chances!"

Hundreds of other industrial plants throughout the country have discovered that using SCOTT AIR-PAKS is the safest, most efficient way to complete work in hazardous atmospheres quickly, easily, economically.

Call in your Safety Equipment Dealer or
WRITE TODAY
for full information.

SINCE 1932 Scott FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.
242 Erie Street Lancaster, N. Y.
Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 3019 on handy form, pgs. 2-3

Alarms automatically when contacts fail . . .

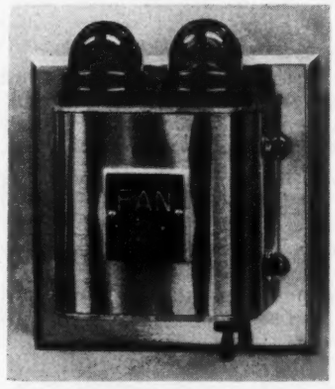
simple to install and can be located anywhere

Uses: Supplies complete annunciator service — will supervise any machinery or equipment that has a contact to initiate an alarm.

Features: Each unit is completely wired and needs only to be connected to the trouble contacts, the audible signal and to power.

Description: Vigilarm warns of an abnormal condition of the electrical contacts under supervision both visually and audibly. Both a red and green lamp flash on and an audible signal sounds.

Operation of the toggle switch (seen at lower right corner of unit) silences the audible signal and extinguishes the green lamp. When the contacts restore to normal, the audible signal is automatically sounded again, the red ramp goes off and the green lamp goes on. Moving the toggle switch silences the signal and extinguishes the green lamp — indicating normal condition of contacts.

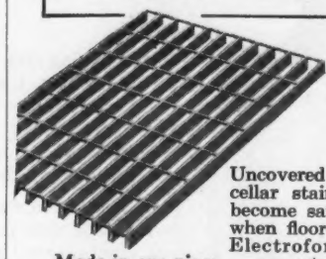


Complete automatic annunciator service is supplied by this package wiring device unit

Each Vigilarm is a complete individual annunciator in itself. However, any number of additional units may be added should more points require supervision. While a group of units would connect to the same audible signal, that signal would sound for each incoming alarm even though it had been silenced for a previous alarm.

It is designed for flush or surface mounting on standard outlet boxes.

Make those **OPEN SPACES** ***SAFE and USABLE*** with this unique, one-piece **OPEN STEEL FLOORING**



SILENT! STRONG! SECURE!

Uncovered pits, light wells, cellar stairways, etc. quickly become safe and usable areas when floored with Blaw-Knox Electroforged Steel Grating. Made in one piece . . . no nuts or bolts to rattle or lose. Provides safe footing even when wet or greasy and lasts indefinitely. Admits maximum light and air. Furnished in any shape, cut to fit. Just send dimensional sketch of area to be covered and we will forward price by return mail.

BLAW-KNOX COMPANY, *Grating Department*
BLAW-KNOX EQUIPMENT DIVISION
2076 Farmers Bank Building, Pittsburgh 22, Pa.
STerling 1-2700

ELECTROFORGED® STEEL
BLAW-KNOX GRATING

When inquiring check CP 3020 on handy form, pgs. 2-3

1000 GALLONS DEIONIZED WATER 18¢*
(equivalent to distilled water)
*Based on 10 grain water

Elgin Ultra-Deionizer

Mineral impurities in water used for processing can cost a lot of money in rejects and inferior product quality. Objectionable spots on product surfaces following rinsing and drying is one example. Unwanted minerals left in chemicals and pharmaceuticals is another. Troubles encountered in countless processes can be traced directly to the mineral impurities in water.

The Elgin Ultra-DeIonizer will eliminate such water troubles at a cost any plant can afford. It will produce large quantities of mineral-free water, of even higher quality than that obtained by distillation or evaporation — and at a mere fraction of the cost. Being a compact, simple-to-operate unit containing a mixture of cation and anion exchanging resins in a single tank it is low in investment and operating costs. That's why plants using two and four column demineralizers are replacing such equipment with the dependable new Elgin Ultra DeIonizer.

Let us have our nearest representative show you how it can eliminate rejects and improve product quality in your plant — or ask for Bulletin 512.

Write today for complete data

ELGIN SOFTENER CORPORATION
180 N. Grove Avenue, Elgin, Illinois
WATER CONDITIONING FOR EVERY NEED

When inquiring check CP 3021 on handy form, pgs. 2-3

Would you like to receive CHEMICAL PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, chemical engineer, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where chemical processing is an important factor . . . CHEMICAL PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

CHEMICAL PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me CHEMICAL PROCESSING without charge or obligation

Name .....

Title .....

Company .....

Rating of Company .....

Street .....

City ..... Zone .....

State .....

Main Products .....

Installation is simple. Standard units are for 115 v AC operation. Mounted on a two-gang plate, Vigilarm lends itself to installation in any location.

(Manufactured by The H. R. Kirkland Co., Dept. CP, Morristown, N. J. . . . or for more information check CP 3023 on handy form, pages 2 and 3.)

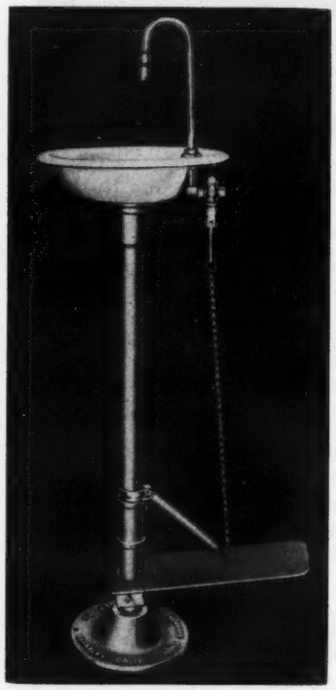
Easily cleans goggles, plastic face shields and safety glasses . . .

nozzle gives aerated spray

Uses: Wash fountain is designed to permit shop and laboratory workers to clean safety glasses, goggles, and plastic face shields.

Features: Simple operation.

Description: HAWS Model No. 8985 fountain has a nozzle that



Foot-treadle operated fountain furnishes aerated spray directly down on surface being cleaned

furnishes an aerated spray directly down on the surface being cleaned.

(Offered by the Haws Drinking Faucet Co., Dept. CP, Berkeley 10, Calif. . . . or for more information check CP 3024 on handy form, pages 2 and 3.)

Where Life itself depends on accurate Speed Control!

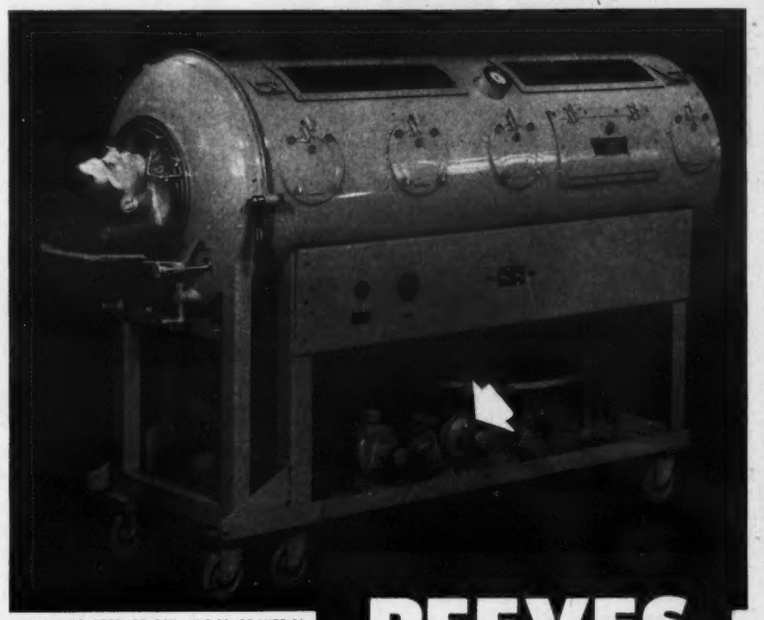
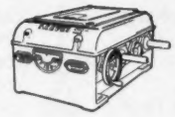


PHOTO COURTESY OF IRON LUNG CO. OF AMERICA

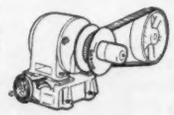
REEVES is on the job

Choose from the Complete REEVES Line

Variable Speed Transmission: provides speed flexibility over 2:1 to 16:1 range. Fractional to 87 hp. Heavy duty applications.

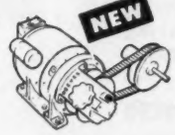


Vari-Speed Motor Pulley: converts any constant speed motor to a variable speed drive. 4:1 speed ratio. Sizes to 10 hp.



Motodrive: combines motor, speed varying mechanism and reduction gears in one unit. 2:1 to 6:1 speed ratios. Fractional to 25 hp.

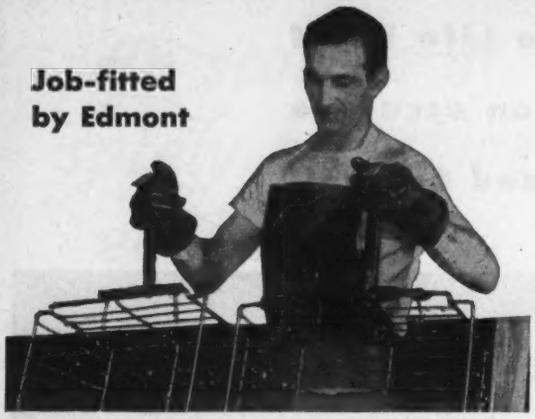
Flexi-Speed Drive: versatile, economical drive with 8:1 speed range. Mounts in any position . . . drives in any direction. ½, ¾ and 1 hp.



When a polio victim depends on the Iron Lung for his very breath—his chest expanding and contracting automatically to the positive and negative pressures inside the Lung—REEVES Speed Control regulates his breathing. Simply by the turn of a handwheel control, the technician varies the rate of respiration to suit the exact breathing requirements for each patient and each changing condition. This is only one of the more than 2,750 leading makes of machines standardly equipped with REEVES Speed Control for outstanding dependability and performance. When you buy *new machines* insist on REEVES-equipped. Give your machines *now in service* greater work range, increased output, greater accuracy by installing REEVES Speed Control. Write today for 132-page catalog. Specify Dept. CP99-G.

REEVES PULLEY COMPANY • Columbus, Indiana

When inquiring check CP 3025 on handy form, pgs. 2-3



CASE NO. 217: Work in 120°-180° chromic acid solutions required snag-resistant gloves. Neoprene coated gloves used lasted 3-4 hrs. Job-fitted gloves with 30% thicker red NEOX (reinforced neoprene) coating now average 4 to 5 days.

Job-fitted gloves are safer, and cost less

(usually save 40% to 70% of glove costs)

On many industrial operations, modern gloves made of coated fabric have largely replaced canvas, leather and unlined rubber gloves. Improved coatings, now available, far exceed these older materials in their resistance to cutting action, abrasion, oils, greases, acids, caustics, solvents, degreasants and extremes of temperature.

In addition to cost savings averaging 40% to 70% (as much as 30c per man hour saved under severe conditions) these *job-fitted* gloves solve many problems — from avoiding finger-marks on polished laminates to preventing acid burns in plating baths — from repelling sharp slivers in broach coolant to providing a firm grip on sheet glass.

Make This Simple Test at Our Expense

Send a brief description of your operation, materials handled and temperature condition. Without charge, we will recommend and supply sample job-fitted gloves and procedure for testing on-the-job. As world's largest maker of coated industrial gloves our laboratory also develops special gloves to meet special problems. Address Safety Engineering Service, **Edmont Manufacturing Company, 1204 Walnut St., Coshocton, Ohio.**

Edmont job-fitted work gloves

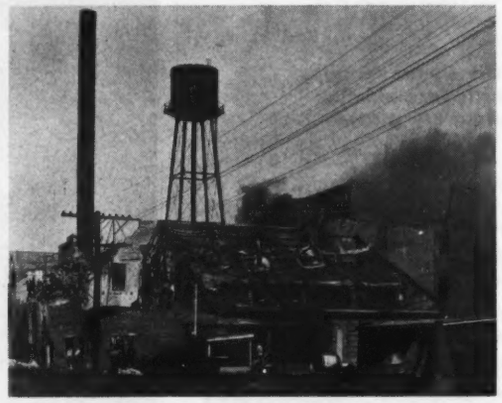
Recommended and supplied by leading industrial distributors

When inquiring check CP 3026 on handy form, pgs. 2-3

Why an organized fire brigade in a chemical plant . . .

survey indicates 9 out of 10 industrial fires controllable by in-plant personnel

In recent months there have been a surprising number of fires and explosions in chemical plants throughout the U.S. Despite these occurrences, however, and the fact that chemical plants are rated as extra



Destroyed chemical plant after sudden blaze. Plant had no internal fire brigade

hazardous by fire experts, losses have been kept to a reasonable figure, although it is true that much can still be done to achieve a further reduction. One of the reasons for the industry's good record has been the establishment and training of plant fire brigades and supplementary employe fire squads.

Chemical Industry Hazards

Any practical and effective organization for a chemical plant's safety should be designed to assure prompt action immediately at the point where the fire may break out. Fires and explosions resulting from chemical action may be arranged in three general groups: 1) chemical processes which get out of control, 2) chemicals which accidentally come in contact with other materials and react to cause fire, and 3) unstable chemicals which decompose.

In addition, flammable liquids or vapors escaping from processing equipment may be ignited by open flames, sparks or other external ignition sources. A few examples typify what may occur in the chemical plant:

During manufacture of chloronitropyridine, fire flashed at the manhole of a still where nitrates were added. Contents of the still were destroyed. Fortunately, operator involved was protected by a steel partition.

While pharmaceuticals including an aniline amino compound were being processed in a steel, glass-lined reactor, an uncontrolled reaction caused an explosion. Reactor was wrecked and building damaged. The plant fire brigade prevented further loss by fire.

Bottom outlet connection of an 8000-gal storage tank for mixed nitric and sulfuric acid corroded away. Acid mixture escaped and set fire to

WESTLINE
INDUSTRIAL SAFETY SIGNS

Costing only a few cents each, WESTLINE SAFETY SIGNS can be applied to any smooth surface—glass, cement, metal, wood, etc. *Pressure-sensitive*, they do not require moistening—stick permanently with finger-tip pressure.

Anyone can put up WESTLINE SAFETY SIGNS—skilled help is not necessary—no more screws, bolts, drilling or painting. Just strip off backing and apply—will not curl, pop, peel or crack. Leave up permanently or peel off after need has passed—will not mar surface.

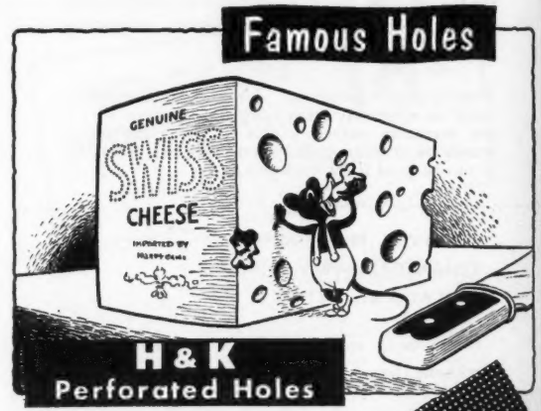
WESTLINE SAFETY SIGNS are made of durable fabric and resist moisture, dirt, etc.—use indoors or out.

Based on National Safety Council and A.S.A. standards, WESTLINE SAFETY SIGNS are available in over 200 stock descriptions and are also made on special order.

Write today for free samples and specifications

WESTLINE PRODUCTS DIVISION
WESTERN LITHOGRAPH CO.
600 East Second Street, Los Angeles 54, California

When inquiring check CP 3027 on handy form, pgs. 2-3



Nature puts the holes in Swiss cheese — large holes, small holes — with no particular pattern in mind. We actually improve on nature when we perforate for our holes are uniformly spaced and precise as to size. So, when you require accurate screens for grading or separating or for any of a thousand other uses, specify H & K. We offer you 70 years of experience, a wide range of hole sizes, shapes and spacings and facilities for perforating any metal, hardboard or plastic available in sheets, plates or coils.

If it can be perforated . . . H & K can perforate it!
Ask for our Catalog No. 62

Harrington & King PERFORATING CO

5636 Fillmore Street, Chicago 44, Illinois
114 Liberty Street, New York 6, New York

When inquiring check CP 3028 on handy form, pgs. 2-3

wood-encased carboys and a nearby wooden shed. Here again plant fire brigades confined blaze to immediate area and saved plant from further damage.

Recent Fire Survey

In a recent survey, safety directors of nearly 500 large industrial concerns in the U.S. reported that of the 1759 fires on their properties last year, 87% or almost 9 out of 10 were put out while the blaze was still small by plant fire brigades and trained plant personnel. In only 82 cases were municipal fire departments needed to extinguish the fires. Sprinkler systems were credited with putting out 35 fires. Included in this survey were some of the nation's largest chemical companies.

What a Fire Brigade Can Do

An over-all plant fire brigade in addition to departmental fire squads is a must for large chemical manufacturers or processors to keep fire losses small or negligible. By knowing the plant's production hazards and special methods of extinguishment, they can bring the plant's full fire-fighting resources to bear upon a fire which has not been promptly extinguished at the start. They are also available for effective action in other emergencies such as floods, wind storms, and similar disasters.

Another reason why privately organized fire fighting can help trim fire losses is that public fire departments may not be immediately available. Traffic conditions, other fires, and delayed alarms may, for example, slow the arrival during the early vital stages of a fire. In some small communities, the municipal fire department may be inadequate in size or poorly equipped to cope with a serious chemical plant fire.

Then, too, some plants have been built at considerable distance from towns with professional fire services. By contrast employes are always on the scene when the plant is operating and the danger of fire greatest.

(Managers of chemical plants who want advice on the formation of employe fire brigades or want to improve existing fire fighting organizations may obtain manuals from the Fire Protection Institute, Dept. CP, 670 Fifth Ave., New York 19, N. Y. . . . or for more information check CP 3029 on handy form, pages 2 and 3.)

Gives info on throw-away and permanent salt dispensers

Salt tablet dispensers, both permanent and throw-away types, and salt tablets and combination tablets are described in two-page bulletin. One page is devoted to manufacturer's "1-4-U Throw-Away Salt Tablet Dispenser" and various types of tablets, including salt, salt-and-dextrose combination, enteric-coated and impregnated. Other page illustrates and describes the permanent salt tablet dispensers, including Bakelite and translucent plastic models.

Bul No. 0408-3 is issued by Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. When inquiring specify CP 3030 on handy form, pages 2 and 3.

Corrosive Valve Services?

try this combination of economy and corrosion-resistance

LUNKENHEIMER "CAUSUL" METAL

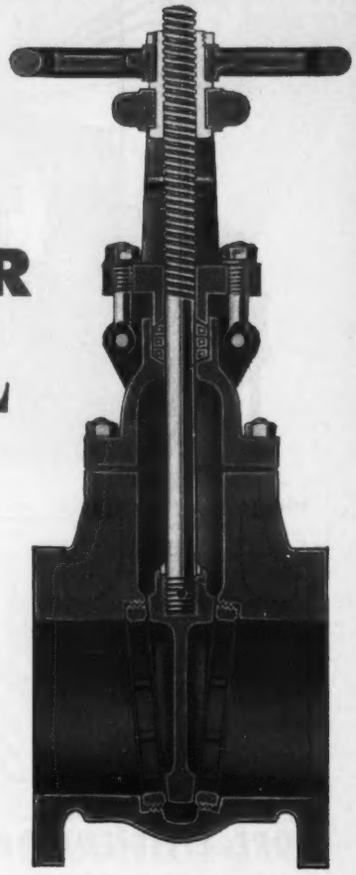


Fig. 1639-8—Gate Monel Trim

Fig. 1847-4—Gate 18-8 Mo Stainless Steel Trim

200 lb. W.O.G.

In corrosive valve applications, trim is a most important factor. If you can get *maximum* corrosion resistance in the trim, combined with *useful* corrosion resistance in a less expensive body, you can save money in most services.

That is exactly the combination you get in "Causul" Metal Valves. Trim is available in either Type 316 Stainless Steel or Monel Metal — providing the best corrosion resistance you can buy. "Causul" Metal bodies and bonnets are less expensive than all-Monel or all-Stainless and *have been used successfully for more than 20 years* in a wide variety of services. They are much more resistant to corrosion than iron valves . . . much tougher, too. And the problems of electrolytic corrosion between seating and body materials do not exist in "Causul" Metal Valves.

"Causul" Metal is an exclusive Lunkenheimer development. Ask your Lunkenheimer Distributor for more details, or write for Circular 592 to The Lunkenheimer Co., Box 360C, Cincinnati 14, Ohio.

Fig. 1708-8—Gate Monel Trim

Fig. 1845-4—Gate 18-8 Mo Stainless Steel Trim

225 lb. W.O.G.

Screwed

Fig. 1709-8—Gate Monel Trim

Fig. 1846-4—Gate 18-8 Mo Stainless Steel Trim

175 lb. W.O.G.

Flanged

TYPICAL APPLICATIONS

OIL REFINERIES — Sludge and recovery acids, wash liquors, sour crudes, sulphuric acid, caustics, and certain distillates.

COKE AND BY-PRODUCTS — Certain acid and ammoniacal liquors, distillates, agitator service, sulphuric acids and caustics.

WATER TREATMENT — Various water treating solutions, such as soda ash and sodium aluminate. To handle sea water.

PAPER — (Sulfate, Kraft and Soda Processes) — black, green and white liquors.

SUGAR — Raw sugar juice lines.

TEXTILE and rayon processing.

FERTILIZER manufacturing.

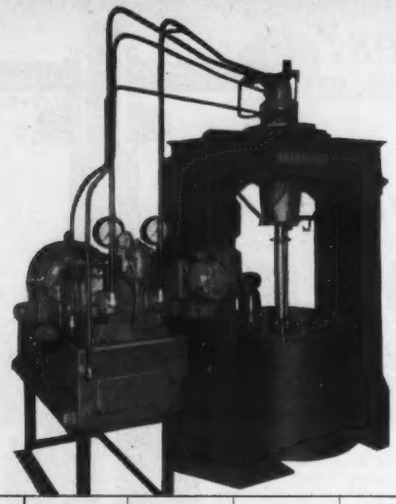
CAUSTIC solutions, processing.

LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

L-453-15

When inquiring check CP 3031 on handy form, pgs. 2-3



RPM	LOADING Low Speeds	UNLOADING Positive, Slow Speeds	WASHING Intermediate Speeds	FINAL EXTRACTION High Speed
1500				
1250				
1000				
800				
400				
200				
0				

VARIABLE SPEEDS MEAN...

MORE EFFICIENT PROCESSING

Do you process materials which require centrifuging at different speeds? Or do you have several products with different filtering and washing characteristics to be processed in the same centrifugal? If so, Tolhurst Suspended Centrifugals, with infinitely variable speed hydraulic drive, provide the most efficient answer. By simply turning the hand wheel on the fluid drive unit, you can select exactly the speed you want for each different operation. Tachometer indicates basket speed at all times. Basket diameters and speeds are: 20" - 0 to 2500 RPM, 26" - 0 to 2500 RPM, 32" - 0 to 1500 RPM, 40" - 0 to 1500 RPM, 48" - 0 to 900 RPM.

YOUR CHOICE OF MATERIALS

BASKETS — Perforate or imperforate, constructed of steel, steel rubber-covered, stainless steel, monel or other materials.

CASE — Steel case can be lined with stainless steel, monel, rubber or other materials.

RACK AND PLOW OF COUNTERBALANCED UNLOADER — Steel, stainless steel, monel or bronze.

ACCESSORIES — Machine can be furnished with fume-tight cover, feed and spray pipes.

Write for Details and Prices

Tolhurst CENTRIFUGALS

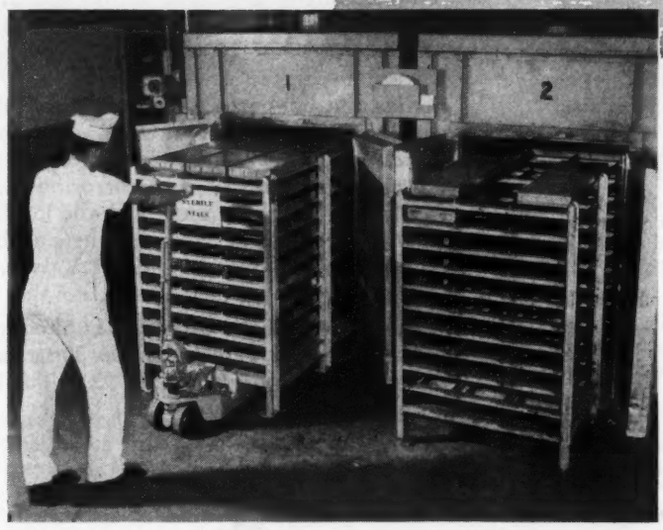
DIVISION OF
AMERICAN MACHINE AND METALS, INC.
EAST MOLINE, ILLINOIS

When inquiring check CP 3032 on handy form, pgs. 2-3

construction and maintenance

Temperature of 446° F Resisted by Silicone-painted Racks

Withstand 50 three-hour cycles at the high temperature without apparent damage when loaded with trays of aureomycin at Lederle Laboratories



Silicone-based aluminum paint on rack at left is still in good condition after 50 three-hour cycles at 446°F, while rack at right has been through only five sterilizations and is about to be retired from service

Effect of 50 three-hour heating cycles has been well withstood by silicone-coated rack in left portion of lower photograph, whereas organic-painted rack at right has been taken out of service after 15 such heating periods

PROBLEM: At the Pearl River, N. Y. plant of Lederle Laboratories Div., American Cyanamid Co., racks are loaded with trays of aureomycin and other antibiotics and heated for three hours at 446°F (230°C) to kill pyrogens. After only three to five such cycles, the organic paint on the racks cracked and peeled, permitting rust formation.

These flakes of rust or loose paint constituted a definite hazard since they can cause rejection of an entire rack of material — an expensive loss.

Solution: The racks were sandblasted, sprayed with silicone-based aluminum paint, baked for ½ hour at 230°C, sprayed again, and baked a second

time at the same temperature. The paint is based on Silicone Resin 803.

Results: The silicone-coated racks, as shown at the left in each of the accompanying photographs, have withstood 50 of the three hour cycles at 446°F without apparent damage. Since Lederle obtained such good results with the coating on these racks, they have also applied it to some of their other sterilizing equipment for biological and pharmaceutical products.

(Silicone Resin 803 is product of Dow Corning Corp.. Dept. CP, Midland, Mich. . . . check CP 3033 on handy form, pages 2 and 3.)

Resilient, snap-on glass fiber pipe insulation is light, has low K factor

Material is molded in one-piece, 6-ft lengths for convenience and fast application

Uses: For all heated piping applications up to 350°F, or a "second layer" of insulation for high temperatures, and for low temp uses of all types.

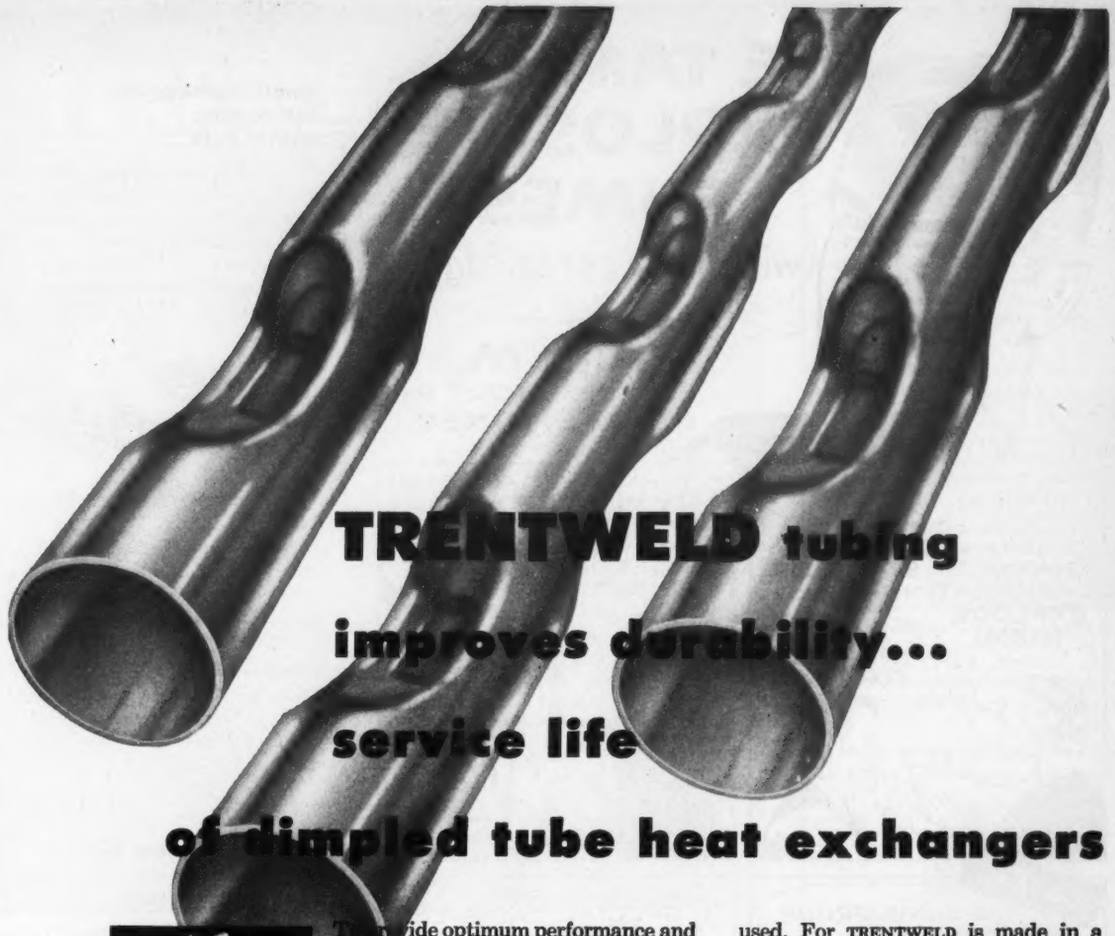
Features: One-piece molded fine-glass fiber pipe insulation is resilient, flexible, and has a K factor of .23 at 100° mean temp F. It is said to be non-breakable, very light in weight, and insoluble in water. Material cuts readily, is clean and pleasant

Lightweight, resilient insulation is snapped on pipe

to handle, and can be painted. It is made in one-piece 6 ft lengths for easier and faster application.

Description: Insulation is composed of extremely fine, blown glass fibers bonded with a phenolic resin and molded into one-piece sections. It will not rot, mold, decay, or absorb moisture, according to manufacturer. It is said to resist the attack of most acids and alkalis and is not corrosive to metals.

(G-B Ultrafine Pipe Insulation is a product of Gustin-Bacon Mfg. Co., Dept. CP, 210 W. 10th St., Kansas City, Mo. . . . check CP 3034, pages 2 & 3.)



TRENTWELD tubing improves durability... service life of dimpled tube heat exchangers

To provide optimum performance and durability in extreme temperature applications of their dimpled tube, aircraft heat exchangers, the AiResearch Division of the Garrett Corporation is now using TRENTWELD stainless steel tubing.

AiResearch engineers developed a technique for stepping up the cooling efficiency of their heat transfer units 26% . . . they dimple the tubes used in the construction of their heat exchangers. The dimples interrupt the smooth flow of air through the tubes and permit more rapid exchange of hot and cold molecules. But in service use these tubes are subjected to high temperatures where ordinary materials won't stand up.

That's why TRENTWELD tubing is used. For TRENTWELD is made in a tube mill by tube specialists. It is formed from accurately rolled sheet and strip and fusion welded by an exclusive process that insures complete uniformity throughout. TRENTWELD is produced in a wide range of grades, gauges and finishes and in practically any size from ⅛" up.

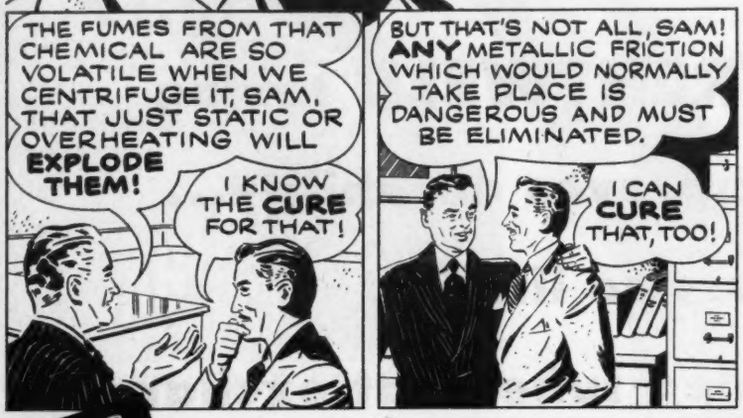
Trent Tube Company engineers have successfully solved many other application problems for stainless and high alloy tubing. Their services and broad background of experience are available to help you solve yours. If you use any form of tubing, why not call in one of our representatives. And remember, *you can't buy better tubing than* TRENTWELD.

TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

When inquiring check CP 3035 on handy form, pgs. 2-3


THE FUMES FROM THAT CHEMICAL ARE SO VOLATILE WHEN WE CENTRIFUGE IT, SAM, THAT JUST STATIC OR OVERHEATING WILL EXPLODE THEM!
I KNOW THE CURE FOR THAT!
BUT THAT'S NOT ALL, SAM! ANY METALLIC FRICTION WHICH WOULD NORMALLY TAKE PLACE IS DANGEROUS AND MUST BE ELIMINATED.
I CAN CURE THAT, TOO!

LATER
THE FUME-PROOF HOOD ON THIS STANDARD AT&M MACHINE WILL SEAL FUMES IN-TIGHTER THAN A DRUM. AND—
WE DEVELOPED A SPECIAL TWO-SPEED SELF-BRAKING MOTOR JUST FOR YOUR PARTICULAR PROBLEM WHICH COMPLETELY DOES AWAY WITH THAT FRICTION YOU WORRIED ABOUT. YOU'RE IN THE CLEAR —SAFE AND EFFICIENT!

FREE ILLUSTRATED BOOKLET

AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

SAVE TIME, SPACE AND COSTS WITH

A.T. and M. CENTRIFUGING

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

When inquiring check CP 3036 on handy form, pgs. 2-3

CONSTRUCTION

Small, lightweight, self-locking anchor nuts

Two self-locking anchor nuts with small envelope dimensions and light weight have been announced by manufacturer. They are made in 4-40 and 6-32 thread sizes and meet applicable requirements of specifications AN-N-5 and AN-N-10. The nuts are alike in design, except for addition of a dome on one. This latter protection eliminates wire chafing on screw threads in electrical assemblies.

Made in 4-40 and 6-32 thread sizes

(Products of Nutt-Shel Co., Inc., Dept. CP, 811 Airway, Glendale 1, Calif. . . . or for more information check CP 3037 on handy form, pages 2 and 3.)

Summer vacation for engine rooms — push-button boiler

Uses: Unit is designed to be tied in with existing high pressure steam system for producing process steam, during heavy-load winter months. In summer it will operate alone to furnish minimum process steam required for running plant.

Features: Boiler is completely automatic and does not require banking, as it will burn only enough fuel to maintain pressure during periods of low loads. Variations in steam load are also handled by automatic controls.

Description: Boiler will produce 8000 lb steam per hr, and is oil and gas fired. Fully assembled on arrival, it needs only to be set in place on floor of engine room, and hooked up ready to operate.

As the boiler is operated by push-button start and stop, an engineer can supervise it leaving firemen free for productive work or for supplementing maintenance crews.

(Integral-Furnace, Type FM is a product of The Babcock & Wilcox Co., Dept. CP, 161 E. 42nd St., New York 17, N. Y. . . . check CP 3038 on form, pages. 2 & 3.)

The Valve That IMPROVES With Use

In the EVERLASTING VALVE, the disc is always in contact with the sealing surface of the seat. Each time the valve is opened or closed, the disc moves across the seat with a rotating motion, and this self-lapping action continuously polishes the sealing faces, keeping the seal drop-tight.

And note these additional EVERLASTING features . . . straight-through flow . . . no lubrication required . . . quick operation . . . non-wedging. These unique valves are ideal for all blow-off, shut-off, equipment outlets and many other services, and are suitable for all liquids, vapors and gases. Write for bulletin today.

EVERLASTING VALVE CO., 49 Fisk Street, Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

EV366

Everlasting Valves

for everlasting protection

When inquiring check CP 3039 on handy form, pgs. 2-3

thousands of users PROVE "HI-TEMP" C-5 THREAD COMPOUND IS BEST FOR ALL STUD THREADS and STAINLESS STEEL APPLICATIONS

✔ speeds up dis-assembly time
✔ prevents stud breakage
✔ eliminates pitting of stainless steel

NO MORE FROZEN OR GALLED STUDS EVER AT 1800°F

Let us SEND you a FREE SAMPLE so you can PROVE to YOURSELF that C-5 will lick your toughest stud breakage problems!

To assure easy maintenance on products having threaded assemblies many leading product engineers have specified the use of Fel-Pro C-5 as an anti-seize coating on stud threads prior to final production line assembly.

Fel-Pro's exclusive Colloidal-Copper formula allows for easy separation and reduces stud breakage of threaded assemblies after long exposure to extreme temperatures. It eliminates pitting of stainless and alloy steel even where dissimilar metals are joined.

Conduct your own tests with C-5 "Hi-Temp" at our expense. Write for Free Sample and complete data sheet TODAY!

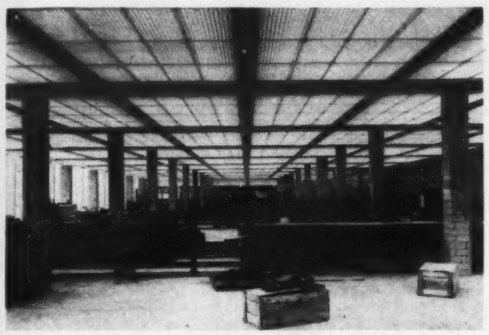
FELT PRODUCTS MFG. CO. 1515 Carroll Ave., Chicago 7, Ill.

When inquiring check CP 3040 on handy form, pgs. 2-3

Overall lighting in production area improves appearance, worker morale

It was decided by the architects of a large pharmaceutical plant that an overall lighting installation in packaging area of plant would prove economical and provide many benefits in the long run.

Ceiling's appearance is said to be a definite morale factor to employes. Area illumination installation conceals network of pipes, ducts, and beams, and presents a neat, trim, orderly appearance. All utilities



Overall lighting installation in packaging department of plant covers 19,320 sq ft

and sprinkler heads are above the system, so entire area is a single surface broken only by rows of acoustical material and low-bright louvers to form an interesting pattern.

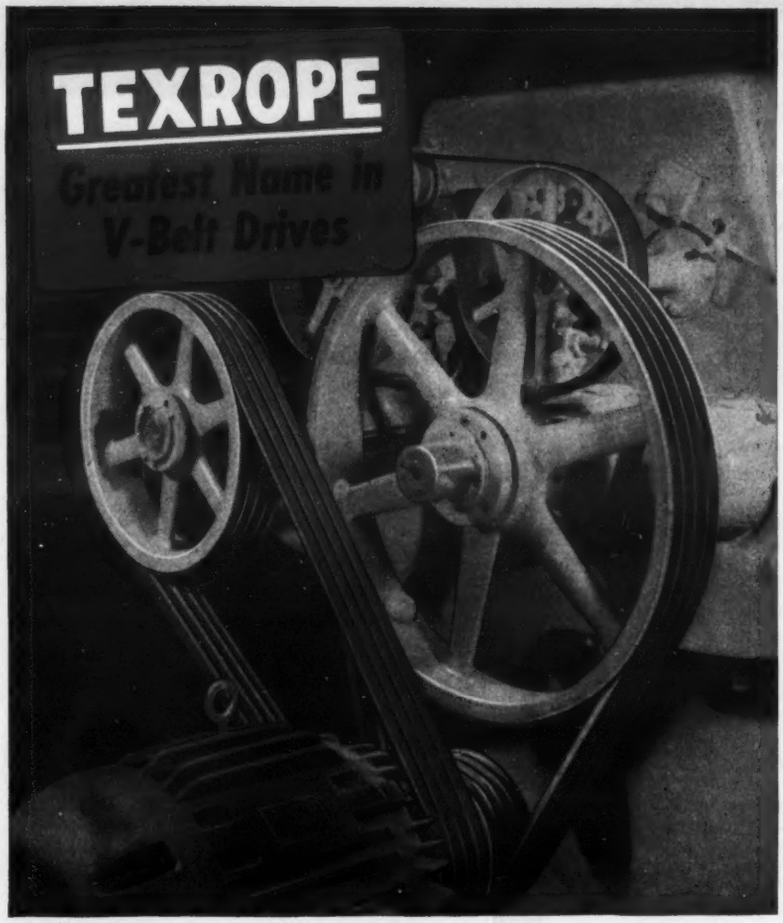
Lighting provided is very comfortable with a minimum of glare and shadows. There is an average maintained intensity of 50 ft candles over the entire 19,320 sq ft area. Finished ceiling height is 12′. Lamps used are 96″ long, 32″ on centers.

Maintenance and installation are said to be easy. There is no superfluous multiplicity of supports to clutter the plenum. Lamp replacement is easily performed by releasing any of the 4 x 2′ egg-crate louvers which hinge from either side, or can be removed completely for cleaning.

(Lighting installation was made in the Mennen Co. plant near Morristown, N. J., using Area Illumination of A. L. Smith Iron Co., Smithcraft Lighting Div., Dept. CP, Chelsea 50, Mass. . . . or for more information check CP 3041 on handy form, pages 2 and 3.)

Bibliography of technical reports on metal testing & fabrication

Technical developments in fabricating, testing, and corrosion protection of metals are described in current edition of bibliography. To obtain March 1953 issue of Bibliography of Technical Reports, remit 50c per copy direct to Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C.

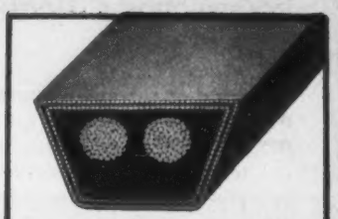


Everything in V-Belt Drives

from one reliable source!

ALLIS-CHALMERS HAS BOTH the engineering experience and the drive equipment to lick the most unusual problems. Your special problems are carefully analyzed by a staff of experienced application engineers familiar with your industry. The result — the right drive for the job! Call your nearby Allis-Chalmers distributor or district office for help on your drive problems, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4086

Texrope and *Magic-Grip* are Allis-Chalmers trademarks.



TEXROPE **Grommet V-Belts—20 to 50% longer life than ordinary belts. Size for size, grommet belts give 1/3 more gripping power, pull heavier loads with higher safety factor.**

STANDARD CAST IRON SHEAVES — Made to order from stock patterns. One to 14 grooves for A, B, C, D or E belts. One to 1000 horsepower. Split sheave or split hub.

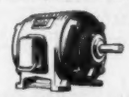
MAGIC-GRIP **SHEAVES — Semi-steel casting with interchangeable, patented taper bushings. On and off in a jiffy. Cannot shake loose. Two to 12 grooves for B, C and D belts; 2 to 250 hp.**

Sold . . .

Applied . . .

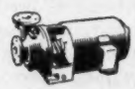
Serviced . . .

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.



MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

When inquiring check CP 3042 on handy form, pgs. 2-3

Checking of current-actuated devices is possible with portable unit . . .

test shows if protective equipment is really protecting against fire or power failure

Uses: For checking and calibrating current-actuated and protective devices in plant or field.

Features: Designed to cut down on electrical equipment and power failures, and reduce the threat of electrical fires, this portable high-current test unit makes it possible to check circuit breakers, overload relays, and other current actuated devices before they are installed, when they are installed, and periodically after they are in service.

Description: Rated at 1 kva, with an input of 0-10 amp, 110 v, 60 cycle AC, loading device is accurately adjustable in stepless increments with fingertip control from 0-500 amp in 5 ranges. It is said to be very efficient, drawing a negligible amount of power from the line in addition to that which is required to actuate the device being tested. It is equally well suited to checking devices with high impedance and low current requirements, as it is for testing devices with low impedance and high current requirements.

Testing any current actuated device merely entails connecting equipment to proper ouput terminals of test unit and adjusting to proper value while observing a current indicating instrument and timer. When results are checked against the manufacturer's published time-current curves or against a "typical calibration table" result is a quick, easy test which is said to show positively if your protective devices are really protecting.

("Industrial Multi-Amp" is a product of the Multi-Amp Corp., Dept. CP, Harrison, N. J. . . . or for more information check CP 3043 on handy form, pages 2 and 3.)

Flaws in metal located simply by field inspection with use of portable kit

Uses: Serviceable for on-the-spot inspection for metal soundness.

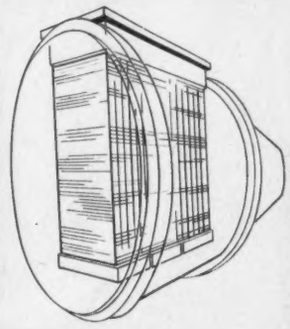
Features: Light, compact, all metal, flaw location kit contains enough material to perform many field inspections, and can be carried in one hand.

Description: Portable kit contents include: dye penetrant, dye remover, developer liquid, brushes, a magnifying glass, hand soap, and a complete set of instructions.

Test materials are applied in the field in basically the same manner as they are in the plant. Pre-cleaning is accomplished by wiping the area or part to be inspected with a rag saturated in dye remover. Dye penetrant is then brushed onto surface being inspected. After being allowed to dwell long enough to enter any defects that may extend to surface of metal, excess penetrant is removed. This may be done either by wiping surface with a rag soaked with dye remover, or by brush application of remover, followed by a water rinse, if water is available.

A.O.Smith for O

VESSELS



Sketch shows general arrangement of assembled exchanger. Tube bundle is installed through rectangular opening in the top on which tube sheet rests.

Exchanger shell, 15-feet in diameter, of welded construction, as designed and built in the A. O. Smith vessel shop.

COOLER FOR GAS D

A case history of A. O. Smith design, engineering and manufacturing skill

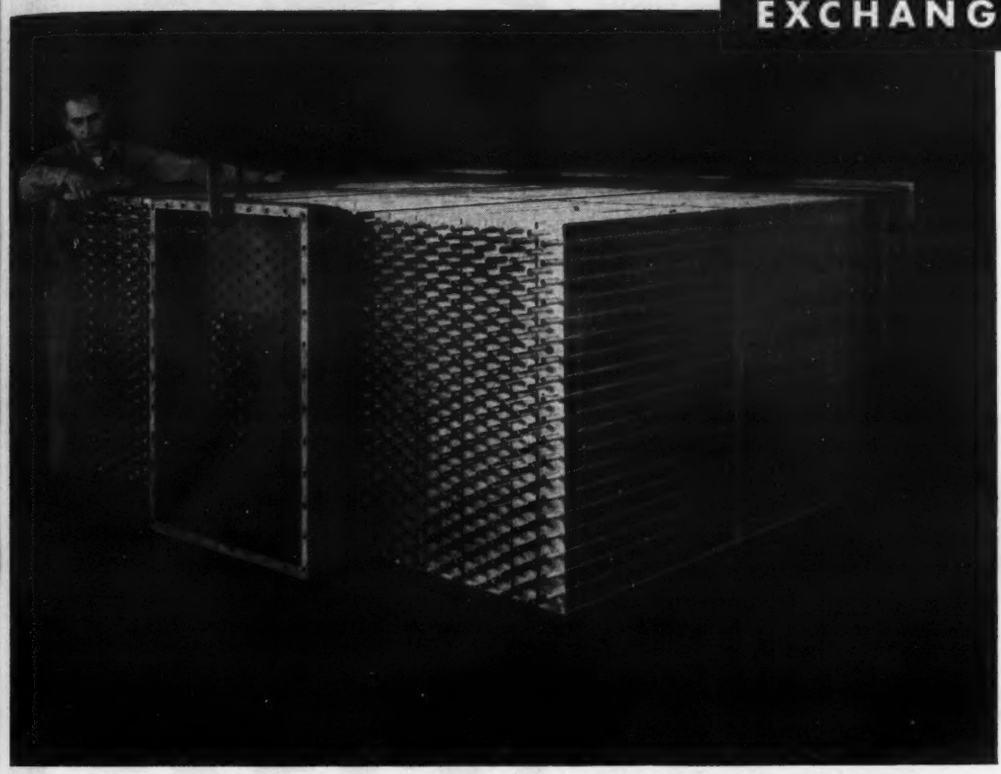
It required the combined pressure vessel and heat exchanger shops of A. O. Smith to produce this, and similar coolers, for the Gas Dynamics Facility of the Arnold Engineering Development Center at Tullahoma, Tennessee. They will cool air for a supersonic wind tunnel. Thermal capacity of this cooler is approximately 85,000,000 BTU/hr. It is designed for 140 psi on the water side, full vacuum on the air side, and to handle as much as 1,890,000 pounds of air per hour with inlet temperatures as high as 410° to 435° F.

The shell, above, is so big and tolerances so exacting that its construction required the services of a manufacturer with a proved record of diverse vesssel experience to fabricate it. It is a weldment, 15 feet in diameter. Yet, maximum out-of-round tolerance is but ¼ of wall thickness and the ends of the vessel are perpendicular to axis within —0° 10′. Clearance between baffles and the tube bundle, when installed, is held to 0.125 inch to prevent air by-pass.

Few manufacturers can take on the responsibility for such a vessel and at the same time provide the equally exacting tube bundle which it houses.

Outstanding Advantages

EXCHANGERS



Tube bundle for exchanger as designed and built in the A.O.Smith heat exchanger shop.

DYNAMICS FACILITY

The tube bundle, providing approximately 80,000 square feet of outside surface, is made up of ¾-inch tubes and aluminum fins spaced 12 to the inch, mechanically bonded to the tubes. Multiple floating heads, of A. O. Smith design, assure freedom from thermal stress, meet the extreme operating conditions in service and permit ready accessibility for replacement of a portion of the bundle or individual tubes.

This outstanding example of vessel and exchanger fabrication in one shop reveals the capacity of A. O. Smith Corporation to satisfy your most exacting pressure vessel and heat exchanger problems. Opportunities are invited to assist in planning, designing and fabricating complete vessels and thermal transfer units. Inquiries will receive prompt and expert attention.

A.O.Smith CORPORATION

Vessels and Heat Exchangers
MILWAUKEE • HOUSTON

When inquiring check CP 3044 on handy form, pgs. 2-3

Since, to insure accuracy, it is necessary to apply developer by spray, two pressurized sprayers of developer are provided in each kit. Developer is "fogged" along the surface being inspected until

Portable kit contains enough material to perform many field inspections

a thin, even white coating has been applied. Developer dries almost instantaneously, pulling the hidden red penetrant to the surface where flaws exist. Cracks are indicated as brilliant red lines, while red dots indicate porosity. Depth of defects is shown by richness and speed of bleed-back.

(Dy-Chek kit is a product of Turco Products, Inc., Dept. CP, 6135 S. Central Ave., Los Angeles 1, Calif. . . . or for more information check CP 3045 on handy form, pages 2 and 3.)

Resistance to acid or alkali solutions exhibited by fiber-bonded fabric

Uses: For use in filter press or vacuum filter applications for highly efficient cake formation or clarity of filtrate. Typical filtration uses are for dyestuff manufacture, clarifying of electroplating solutions, production of yeast, chemicals, and food products.

Features: Product is said to be stable to bacteria such as mold or fungi, and exhibits excellent resistance to acid or alkali solutions.

Description: Material is manufactured with multiply carded construction for a highly uniform fiber distribution. It is sturdy and can be handled like any industrial fabric. It wets out readily and shows good cake release.

Weight of material is 20 oz/72" yd. It is .025 to .030" thick. Air permeability, clean, is 1.1 cfm/sq ft/0.5" H_2O; water permeability, clean, is 4.0 gpm/sq ft/1.0 psi. Material has a tensile strength of 2400 psi; Mullens bursting strength of 230 psi; and a breaking strength of 120 lb/2" width.

(Dynel Windsor Felt is a product of American Felt Co., Dept. CP, Glenville, Conn. . . . or for more information check CP 3046 on handy form, pages 2 and 3.)

BROSITES
FILTAWEB
DEPENDABLY UNIFORM

INDUSTRIAL FILTER PAPERS
DESIGNED FOR USE IN THE FIELDS OF:

BEVERAGES · CHEMICALS · COSMETICS · DRUGS · ELECTROPLATING · EXTRACTS · FOODS · LACQUERS
OILS · PAINTS · PERFUMES · RAYONS · SOAPS · SUGARS · SYRUPS · TEXTILES

AVAILABLE IN ROLLS SHEETS CIRCLES AND SPECIAL DIE CUT SHAPES

Write for Bulletin F.C.P. 16 for description and samples.

BROSITES PRODUCTS CORPORATION
50 CHURCH STREET (Cable Address: BROSCOSAL) NEW YORK 7, N.Y.
TELEPHONE DIGBY 9-1600

When inquiring check CP 3047 on handy form, pgs. 2-3

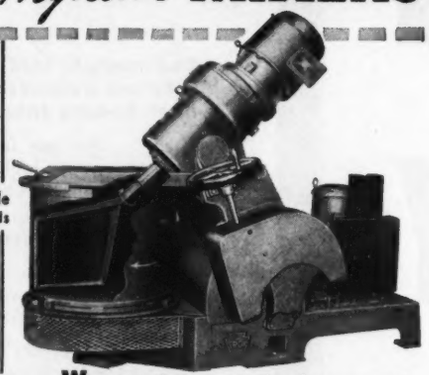
TROY *Angular* MIXERS

Powerful

the *heavy duty* mixer that can easily handle pastes, semi-pastes, and very viscose liquids

Efficient

the mixer that provides a unique multi-directional mixing action; agitator arms sweep the side and the bottom tending to turn the material in while raising it; at the same time it folds the material in at the top from side to center.



Our Bulletin GR-51 gives full details of the TROY Angular Mixers. Send for your copy.

We are getting repeat orders from companies that have tried the 40 and 60 gallon TROY Angular Mixers competitively with conventional change tub mixers and found that the TROY Mixer produced better mixing in shorter mixing cycles. Because of the better mix, some of these companies saved not only time in mixing but money in subsequent operations.

If you are looking for a mixer that you hope can do just that in your plant—produce better mixing in shorter mixing cycles — you should investigate the TROY Angular Mixer.

Process Machinery Division TROY Established 1870

TROY ENGINE & MACHINE CO.
TROY, PENNSYLVANIA, U.S.A.

When inquiring check CP 3048 on handy form, pgs. 2-3

CONSTRUCTION

Malleable iron gives strength & durability to swivel casters

Manufacturer's "21 Series" double ball bearing swivel casters have top plates, fork, wheel, and king bolt nut of malleable iron for greater strength and ability to stand up under hard use. Wheels are equipped

Casters have capacities to 1200 lb depending on size

with oilite bearings. A cotter pin in the king bolt locks the nut in place to assure trouble-free service. Casters are available in 3 and 4" sizes with capacities of 1000 and 1200 lb respectively.

(Product of Buffalo Caster & Wheel Corp., Dept. CP, 1035 Broadway, Hamilton, Ill. . . . or for more information check CP 3049 on handy form, pages 2&3.)

Easy unloading of iron collected by sweeper saves time

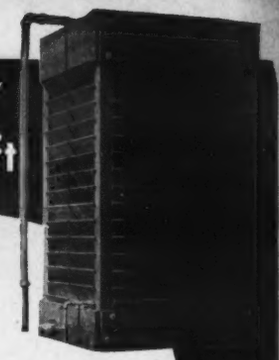
Uses: Rotating magnetic sweeper is for use on large areas or for collecting large iron pieces.

Features: Unit unloads simply by stripping off the thin, tough Neoprene-nylon cover of magnet cylinder, from which accumulated tramp iron is poured into a collection box attached to the frame.

Description: Entire 8" circumference of magnetic housing loads up with iron to a thickness of 1½". Clearance under housing is 1½", allowing large parts to be picked up. When collection box is full, it is easily removed for inspection.

Sweeper is offered in standard widths up to 6 ft. It is also available in larger diameters with even

MARLEY
Natural Draft
COOLING TOWERS



Accepted by the air conditioning, refrigeration and processing industries as the best buy for lasting economy. Entire construction is of heart redwood. Balanced spray system uses patented Marley non-clog spray nozzles. A wide range of commercial and residential sizes stocked in 30 cities for immediate delivery.

Call Your Local Marley Representative

MARLEY The Marley Company
Kansas City, Missouri

When inquiring check CP 3050 on handy form, pgs. 2-3

REPUBLIC
VALVES
INDUSTRIAL · CHEMICAL · AIRCRAFT

OFFSET GLOBE VALVE

J.I.C. AND AN STANDARD TUBE ENDS

High pressure needle and globe valves by Republic have forged bodies for super duty service—brass, steel, aluminum alloy, or stainless steel. Exclusive design features. Pipe, or AN or J.I.C. tube ends, or combinations, sizes ⅛" to 1". Operating range: needle—3,000 psi; globe—2,000 psi, −65° to 350°F.

Manufacturers also of high quality low and hy-pressure check valves, relief, 2, 3, and 4-way plug valves, and special valves to specifications.

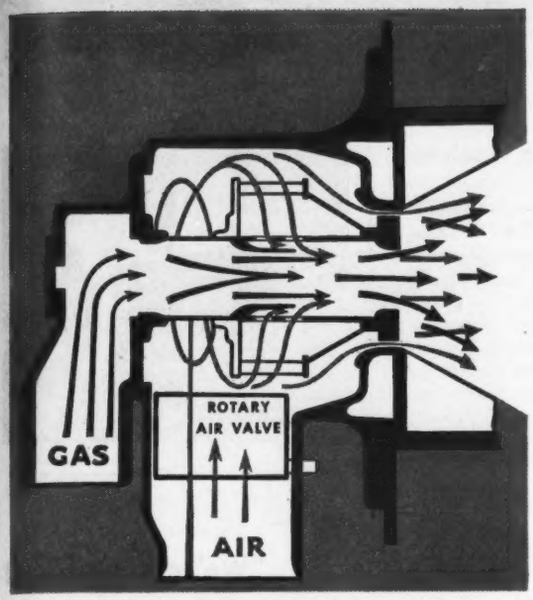
Write for complete catalog and name of nearest distributor.

82

CHECK RELIEF PLUG GLOBE NEEDLE

REMCO REPUBLIC MANUFACTURING CO.
1930 WEST 77TH STREET · CLEVELAND 2, OHIO

When inquiring check CP 3051 on handy form, pgs. 2-3



VORIFLOW® gas burner

. . . another cost-saving feature of

Powermaster®

PACKAGED AUTOMATIC BOILERS

- Keeps fuel cost DOWN and boiler efficiency UP.
- Infinitely variable combustion modulation responds instantly to load demands from 30% to 100% of firing capacity—*with full efficiency!*
- Immediate change-over to alternate fuels is provided with combination units.

NEW BULLETIN . . .

describes and illustrates *all* cost-saving features of the Powermaster. Send for a copy of Bulletin 1219 today.

ORR & SEMBOWER, INC.

960 Morgantown Road, Reading, Penna.

BUILDERS OF COST-SAVING BOILERS SINCE 1885

When inquiring check CP 3052 on handy form, pgs. 2-3

greater floor clearance. Pushed or pulled manually with 56" handle, unit may be easily attached to any vehicle.

(Product of Dept. 370, Multifinish Mfg. Co., Dept. CP, 2114 Monroe, Detroit 7, Mich. . . . or for more information check CP 3053 on handy form, pages 2 and 3.)

Fast, simple installation permitted by design of wireway

Wireway has features which are designed to speed and simplify installation. For instance, only two screws are required to fasten the cover to any one section. Sections are joined by connectors, tees and elbows, all of which require only one screw, which locks a hook and slot arrangement. Connectors and other fittings have a removable face plate which permits wires to be laid after completion of wireway installation.

Straight sections are available in lengths of 1, 2, 3, 4, 5, and 8 ft, all in cross-sectional sizes — 4 x 4, 4 x 6, 6 x 6, and 8 x 8 in. Product is UL approved as auxiliary gutter and wireway.

(Product of Trumbull Electric Dept., General Electric Co., Dept. CP, Plainville, Conn. . . . or for more information check CP 3054 on handy form, pages 2 and 3.)

Waterless hand cleaner easily removes paint and other stains

Paint and other discolorations can be easily removed from exposed skin areas by waterless hand cleaner. It is said to have a soft cleansing action that conditions as it cleans. Product does not contain harsh abrasives or ammonia, but utilizes Lanolin and glycerine.

Cleaner is said to be ideal for mechanics, painters, printers, plasterers, roofers, and carpenters. It rinses off easily under water, leaving skin spotlessly clean and soft without destroying the natural protective oils.

(M & H Waterless Hand Cleaner is manufactured by M & H Laboratories, Dept. CP, 2705 Archer Ave., Chicago 8, Ill. . . . or for more information check CP 3055 on handy form, pages 2 and 3.)

LOWEST COST all-chemical pump

- Use ECO ALL-CHEM Pumps for all concentrations of solutions, mixtures and emulsions of aromatic and aliphatic solvents, organic or mineral acids, and alkalies, in the widest pH range.
- ECO ALL-CHEM Pumps are the only positive displacement pumps capable of handling dry, non-lubricating fluids such as cellulosics.
- Fluids pumped experience no separation, stratification or temperature rise. Fluid delivery is non-surging, non-foaming.
- Physical consistency and chemical stability remain unimpaired by passage through the pump, even under pressure.

- The low price of ECO ALL-CHEM Pumps is the result of simplified design, standardization, and quality-controlled volume production.
- If it's 10 GPM or less you need at pressures up to 70 psi, the ECO ALL-CHEM is the Pump you want.

Write for Bulletin AC-753. Sent on request.

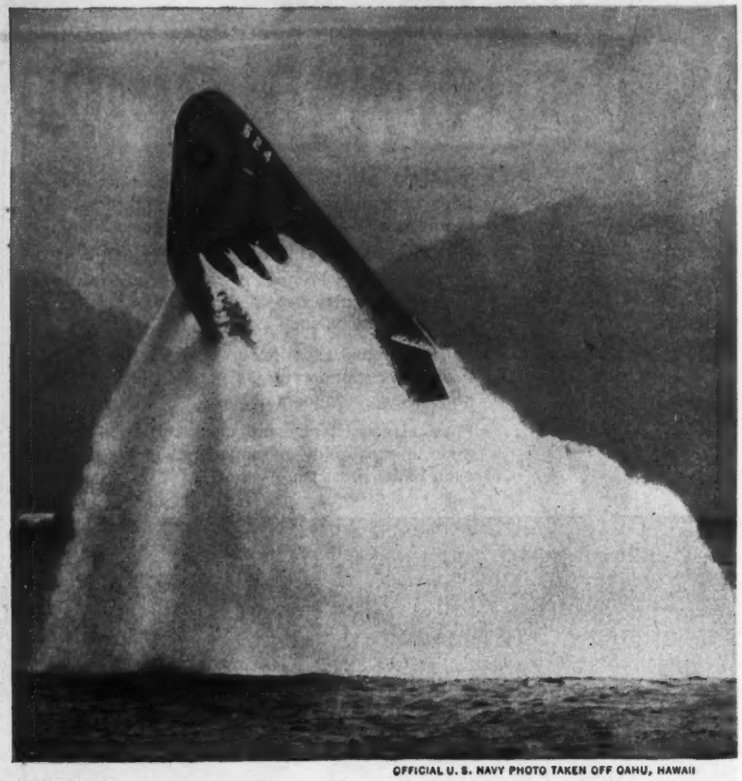
ECO ENGINEERING COMPANY
12 New York Ave., Newark 1, N. J.

All-Chem PUMPS

ECO

When inquiring check CP 3056 on handy form, pgs. 2-3

ELECTRO DYNAMIC
Extra *Dependable*



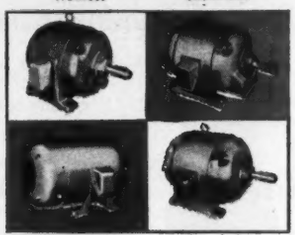
OFFICIAL U. S. NAVY PHOTO TAKEN OFF OAHU, HAWAII

UP FROM THE SEA comes fabulous Motor Stamina for Industry!

Over half a century of service aboard U.S. Navy submarines — *where dependability means life itself* — has bred tremendous stamina into ELECTRO DYNAMIC industrial motors. This inheritance of *extra dependability*, proved during years of gruelling duty under the sea, explains the amazing performance records being established by E.D. motors in industry today.

From 1 to 250 h.p.
(N. E. M. A. STANDARDS)

WRITE TODAY FOR CATALOGUE NO. 875


One-piece cast iron frames.
Extra large "free-flo" air channels.
Permanently aligned cast iron brackets.
Liberal size grease lubricated bearings.

Also a complete line of Direct Current motors and generators

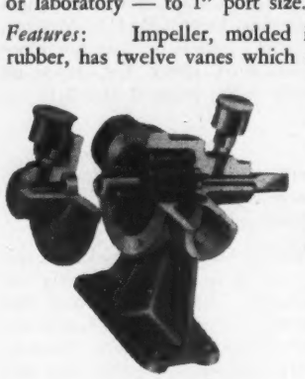
ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

When inquiring check CP 3057 on handy form, pgs. 2-3

Increased number of impeller vanes ups pump's output, improves priming

Uses: For general purpose pumping in industry or laboratory — to 1" port size.

Features: Impeller, molded in a tough, durable rubber, has twelve vanes which are said to result in a greater dispacement and greatly improved pump priming. Sharp lateral wiping edges on each vane minimize friction by reducing impeller drag, produce less unit wear and improve mechanical efficiency of pump up to 15%, according to manufacturer. Another advantage of this impeller is said to be the continuous flow of liquid realized with this design.



Impeller design improves mechanical efficiency up to fifteen per cent

Description: Hypro General Purpose Pump is available in three models — ½, ¾, and 1" port sizes. Case is rust-proof bronze and has a stainless steel shaft, replaceable unit-type seals and straight-through ports. Materials and design of equipment permit pumping of kerosene and fuel oil. Pump will handle dirty water without clogging and may be operated with electric or gasoline motors, or a tractor take-off.

(Product of Hypro Engineering Corp., Dept. CP, 404 N. Washington Ave., Minneapolis 1, Minn. . . . or for more information check CP 3058 on handy form, pages 2 and 3.)

Special tips increase usefulness and versatility of electric soldering gun . . .

said to last 20 times longer than conventional tips and never require dressing

Uses: For soldering requirements within 250 watt rating and, with a different tip, for cutting plastic tile.

Features: "Quick-Hot" soldering gun operates off 120 volt AC current. It heats in 3 seconds when trigger is pressed, cools quickly when trigger is released. Tips are long — to reach inaccessible spots — and rigid. They stay tinned and are easily replaced. Handle and gun are well balanced and cool. There is no "duty cycle." Special tip converts gun into plastic tile cutting tool. A built in spotlight automatically illuminates work.

Description: Electronic soldering gun is fully guaranteed and UL approved. Tips made especially for use with gun increase its versatility. The soldering tip is ferrous coated and silver plated. It is claimed to last 20 times as long as tips of the con-

"We've found that 'soaping' Swagelok Tube Fittings is just a waste of time . . ."

The power plant pictured above is equipped with Swagelok Tube Fittings installed by Midwest Piping & Supply Company, Inc.

Midwest Superintendent Moran says, "We always 'soap' each joint after original installation. Testing Swagelok Fittings revealed no leaks whatever. We've found that 'soaping' Swagelok Tube Fittings is just a waste of time . . ."

Here's further impressive proof that Swagelok Fittings are leakproof . . . on Ultra-High Vacuum applications, Swagelok Fittings commonly are used in the range of 10^{-7} millimeters of mercury.

Swagelok catalog on request. Address Department 462

Swagelok®

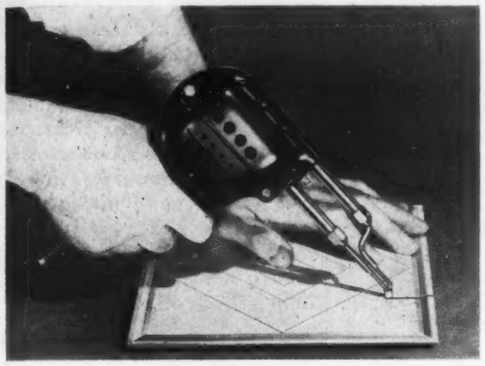
TUBE FITTINGS AVAILABLE IN:
BRASS, ALUMINUM, STEEL, STAINLESS STEEL, MONEL

CRAWFORD FITTING CO.
884 East 140th Street Cleveland 10, Ohio
Teletype CV-785

When inquiring check CP 3059 on handy form, pages 2-3

ventional type. It is said these tips never require dressing, stay tinned indefinitely, and retain full tip contact area.

Another tip converts the gun into a professional plastic tile cutting tool. It can be used to cut straight lines, curves, holes, angles, or odd shaped



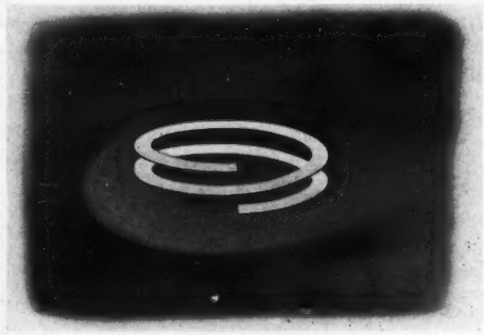
Special tip converts gun into plastic tile cutting tool

molded trim pieces. Cutting is easy and rapid, and anyone can do it, according to manufacturer.

("Quick-Hot" electronic soldering gun and special tips are products of WEN Products Co., Dept. CP, 5808 Northwest Highway, Chicago 31, Ill. . . . check CP 3060 on handy form, pages 2 and 3.)

Back-up rings of Teflon prevent extrusion of O-rings

Back-up rings, spirally machined of tetrafluoroethylene (Teflon) have been designed by manufacturer to prevent extrusion of O-rings. Teflon rings



For all O-ring, sizes to AN drawings 6227 and 6230

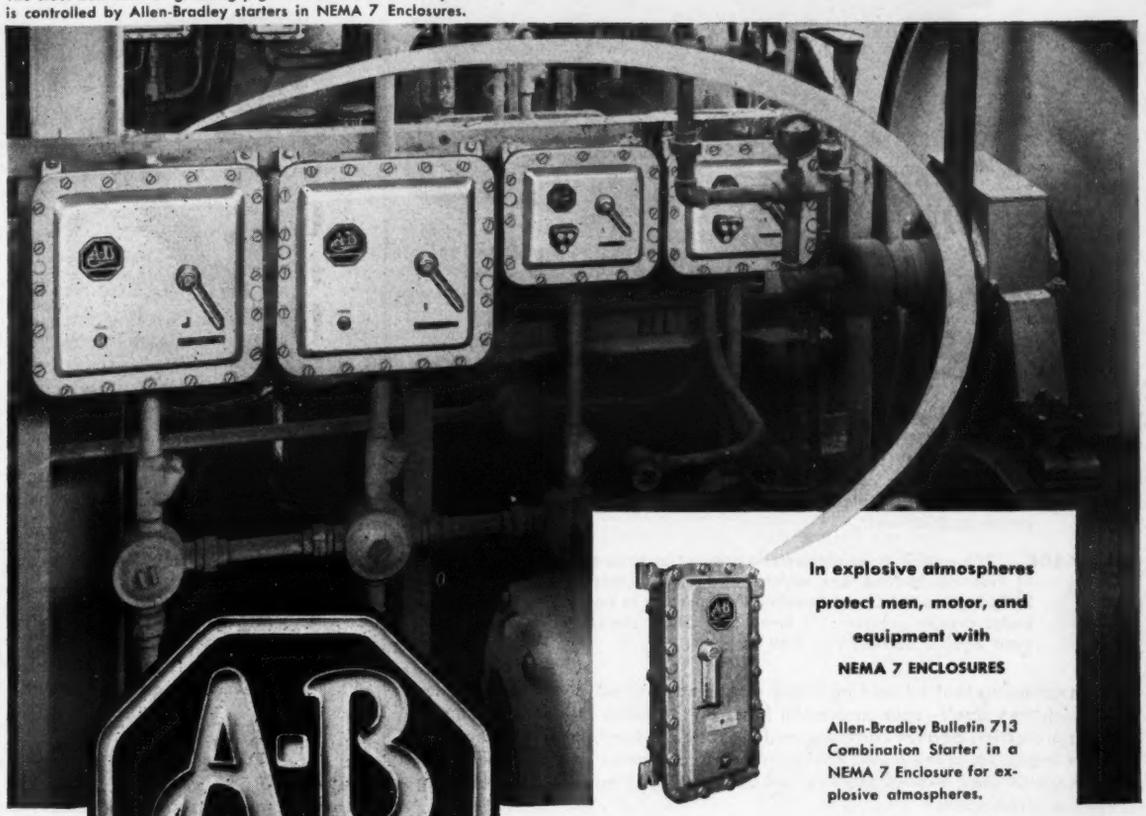
have a high impact strength at temperatures from –100°F to 500°F, and are non-corrosive, non-adhering, non-fraying, self-lubricating, and inert to most chemicals. They are made for all O-ring sizes to AN drawings 6227 and 6230.

(For further information contact Dept. 34, The Garlock Packing Co., Dept. CP, Palmyra, N.Y. . . . or check CP 3061 on handy form, pages 2 and 3.)

In explosive atmospheres...
it pays to install trouble free

ALLEN-BRADLEY MOTOR CONTROL

The steel ball mill for grinding pigments in this chemical plant is controlled by Allen-Bradley starters in NEMA 7 Enclosures.



In explosive atmospheres protect men, motor, and equipment with NEMA 7 ENCLOSURES

Allen-Bradley Bulletin 713 Combination Starter in a NEMA 7 Enclosure for explosive atmospheres.

A-B Quality

The Sign of Quality in Motor Control

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

Where hazardous gases or vapors exist, install Allen-Bradley motor controls in NEMA Type 7 Enclosures. Constructed of cast iron with wide machined flanges, these installations provide maximum protection to man, motor, and machine.

Allen-Bradley solenoid motor starters and bolted enclosures are an ideal combination because double break, silver alloy contacts need no maintenance. The starters have only ONE moving part—no pins, pivots, bearings, or jumpers to cause trouble. Therefore, only very occasional inspection is necessary. Frequent time-robbing removal of bolted covers is ended. See the nearest Allen-Bradley control engineer, today, for his recommendations.

Allen-Bradley Co.
104 W. Greenfield Ave., Milwaukee 4, Wis.

When inquiring check CP 3062 on handy form, pgs. 2-3

OLIVITE
Acid-Handling PUMP

Corrosion and leakage! Two important questions when considering chemical-handling pumps.

Here's how the Olivite answers them:

CORROSION . . . the cast-iron casing, cover and impeller are protected by a heavy covering of OLIVITE, firmly bonded to the metal. It will not pull away or slough off. OLIVITE — a special rubber base plastic impervious to most chemicals, hot or cold, strong or weak. For special chemicals we have OLIVEX — a strong high tensile plastic of which the impeller is made for certain applications.

LEAKAGE . . . We employ three elements to prevent leakage and protect the shaft: 1) Floating Stuffing Box which constantly adjusts itself to the shaft; 2) Spring-Loaded Gland enabling the operator to easily keep the packing under proper pressure; 3) Removable Shaft sleeve which protects the shaft against corrosion as well as wear.

Even assuming that all acid-handling pumps have equal pumping efficiency —which they don't—your choice will focus on the pump that provides maximum protection against corrosion and leakage. At least, these two thoughts were important in the minds of a number of companies now operating 100 or more Olivites. Would you like to have us tell you more about these big Olivite installations?

Our OLIVITE Bulletin No. 308-R

In sending for your copy of this bulletin, tell us about your pumping problem.

•

Olivite Sizes 1¼, 2 and 4 inch; Direct or V-belt drive.

NEW YORK 36 – 33 West 42nd Street • CHICAGO 1 – 221 North LaSalle Street
OAKLAND 1 – 2900 Glascock Street • SAN FRANCISCO 11 – 260 California Street

FACTORIES Hazleton, Pa. Oakland, Calif.

OLIVER UNITED FILTERS OUF INC.

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

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SOUTH AFRICA — E. L. Bateman Pty., Ltd Johannesburg, Transvaal

When inquiring check CP 3063 on handy form, pgs. 2-3

Speedy operation provided by diffusion pump . . .

uses minimum of pumping fluids and operates at high forepressure

Economical use of pumping fluids, speed or operation, and ability to operate at a high forepressure — as great as 0.5 mm Hg — are the principal advantages of a recently announced diffusion pump.

Diffusion Pump

Used in conjunction with conventional mechanical vacuum pumps, unit will reach an ultimate vacuum of 5×10^{-6} mm Hg while operating with a forepressure as great as 5 mm Hg. Pumping fluid recommended is silicone DC 702, 703. Volume required for operation is only 12 ml.

Pumping speed is increased by the high forepressure against which the pump will operate. Since only a four minute warm-up period is required before system is in full operation, this factor increases the speed further. Cooling water needed is 0.1 gpm. All vacuum connections are slip fit rubber tubing. Operation of pump is from standard 110 volt, 60 cycle electrical outlet.

(ASCO Diffusion Pump is product of Will Corp., Dept. CP, Wilco Drive, Rochester 3, N. Y. . . . or for more information reader may simply check CP 3064 on handy Reader Service slip between pages two and three.)

Three checks against loss of lubricant offered by lube fitting . . .

especially designed for use on lubricated plug valves with extreme back pressures

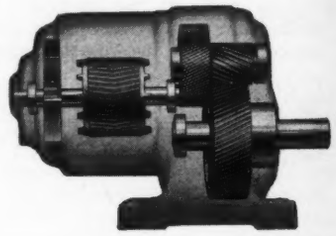
Uses: To prevent loss of lubricant, line fluids, or gases. For particular use in the oil and gas industry, chemical plants, paper mills, sewage disposal plants, and the like.

Features: Especially designed for use on lubricated plug valves where extreme back pressures are encountered, fitting features two ball checks augmenting standard check valve on fitting. This is said to give absolute protection against escape of line fluids as well as making it practically impossible

Dependable Weatherproof Power Drive

For continuous 24 hour outdoor service, the Dorr Co. selects Sterling totally-enclosed, non-ventilated Slo-Speed Electric Power Drives. The Slo-Speeds installed on the Dorr Sifeed Clarifier Units at Lederle Laboratories, American Cyanamid Co., in New York, are giving highly satisfactory service under all weather conditions, states Mr. A. J. Lantelme of the Dorr Co., Stamford, Conn.

STERLING SLO-SPEED



OUTSTANDING FEATURES:

Simplified gear system — balanced design — compact — rugged — highly efficient — abundant lubrication — low output shaft — positive oil seals — Herringbone Rotor — protected — streamlined — direct through ventilation — quiet operation — AGMA speeds — extremely long life — every unit will operate in any position.

20-page illustrated catalog . . . Sterling Speed-Trol, Slo-Speed, Klosd and Klosd-Tite Electric Power Drives. Write for catalog No. I-D-414

STERLING ELECTRIC MOTORS

Plants: New York City 51; Chicago, Illinois Los Angeles 22; Hamilton, Canada; Santiago, Chile Offices and distributors in all principal cities

When inquiring check CP 3065 on handy form, pgs. 2-3

Nylon?
Strongest, toughest. Good for alkalis, organic acids, many solvents. Temperatures to 250°F.

Orlon?
For *HOT* acids, solvents, up to 300°F. Tops for dust collection in hot, corrosive fumes.

WHICH SYNTHETIC FABRIC IS BEST FOR *Your* FILTER?

Dynel? Vinyon-N?
These versatile fabrics resist both acids, bases, even in high concentrations. Temperatures to 230°F.

One of the four materials listed above is best for any tough filtration or dust-collection job that can be handled by fabric-type media. These strong, chemical-resistant fabrics last 3 to 30 times longer than ordinary materials . . . save up to thousands of dollars a year.

FEON fabrics can save on your *tough* jobs, too. They are made in a variety of weaves . . . as yard goods . . . or as pre-fitted elements for any type of equipment. Write us today.

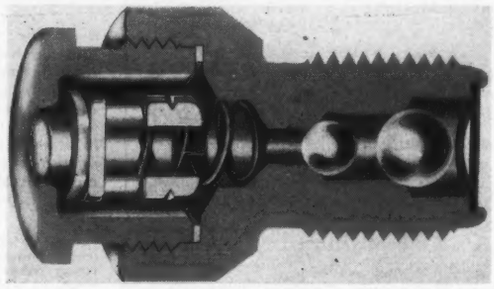
Fabric selector chart, technical data, case histories. Send for it today.

C
FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, INC.
155 Oraton St., Newark 4, N. J.

When inquiring check CP 3066 on handy form, pgs. 2-3

for any foreign matter to foul all checks at the same instant.

Description: The "triple check" fitting permanently replaces the lubricant screw so that the lubricant may be injected into valve directly from a hand gun or a bucket pump, thereby reducing lubing time


Two ball checks augment standard check valve on fitting

and establishing a more positive lubrication of all valve lube ports regardless of back pressure, according to manufacturer.

(Product of Alemite Div., Stewart-Warner Corp., Dept. CP, 1826 Diversey Pkwy., Chicago 14, Ill. . . . or for more information check CP 3067 on handy form, pages 2 and 3.)

Stable, solid foam formulations achieved with use of liquid air entraining agent

Uses: Some suggested applications are for low density concrete and mortar, rigid thermal insulation, and light-weight building products.

Features: Foamed cement paste made with liquid is very stable and sets to a solid foam without diminishing in volume or increasing setting time, according to manufacturer. Varying the conditions or preparation of foam cement makes possible a product with density, thermal conductivity, and compressive strength to suit any need. Densities as low as 12 lb/cu ft are readily attained. At 30 lb/cu ft the compressive strength of cured foamed cement is 300 psi. When used as thermal insulation, foam cement is said to provide low thermal conductivity under varying conditions of temperature and humidity.

Description: This air entraining agent is a reaction product of hydrolyzed proteins with other chemical additives selected to provide foam volume and stability. Being an easy-to-handle liquid, agent offers no bulky storage problems.

Underground pipes are reportedly readily insulated with agent under all field conditions. No special equipment is required. Concrete conduit containing formulated foam cement insulation is said to be rot-proof, vermin-proof, and moisture-proof, assuring positive permanent protection for piping.

(Product of Mearl Mfg. Corp., Dept. CP, 153 Waverly Pl., New York 14, N. Y. . . . or for more information check CP 3068 on handy form, pages 2 and 3.)

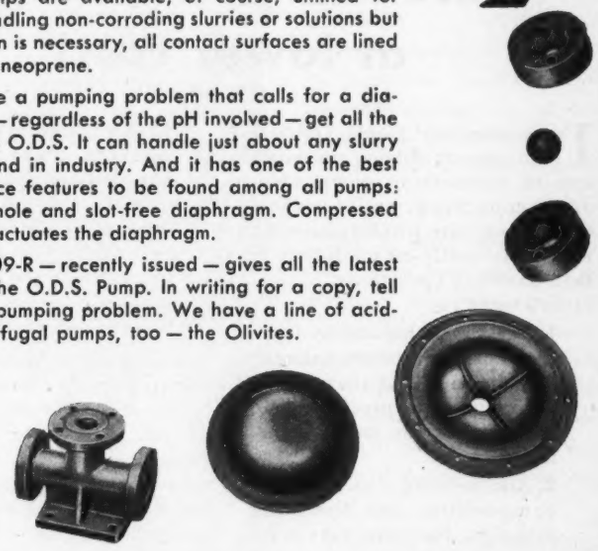
ODS Diaphragm SLURRY PUMP

Every Contact Inch Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for handling non-corroding slurries or solutions but when protection is necessary, all contact surfaces are lined with rubber or neoprene.

So, if you have a pumping problem that calls for a diaphragm pump — regardless of the pH involved — get all the facts about the O.D.S. It can handle just about any slurry or solution found in industry. And it has one of the best low-maintenance features to be found among all pumps: a no-linkage, hole and slot-free diaphragm. Compressed air or vacuum actuates the diaphragm.

Our Bulletin 309-R — recently issued — gives all the latest details about the O.D.S. Pump. In writing for a copy, tell us about your pumping problem. We have a line of acid-handling centrifugal pumps, too — the Olivites.



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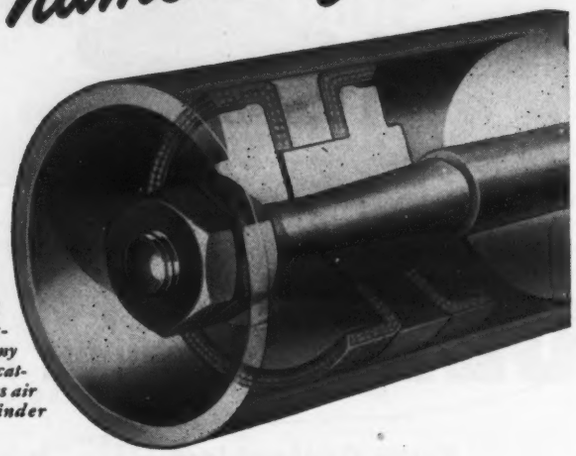
When inquiring check CP 3069 on handy form, pgs. 2-3

You name the fluid...



Phantom cutaway showing typical Pumcup-piston assembly—one of many types for all reciprocating pumps as well as air or hydraulic cylinder mechanisms.

Here's how to pump it at lower cost!

IN thousands of plants, Darcova Pumcups are solving the problem of diminishing pump efficiency, repacking, maintenance, down-time, lost production—the things that really eat up dollars in fluid-handling operations!
Here's why . . .

1. Darcova composition Pumcups not only increase volumetric efficiency, but they *keep* it high with no appreciable fluid slippage for the entire life of the Pumcups.
2. And, because of their design, composition, and operating principle, Pumcups have *many times the life* of most other types of piston packing.
3. Based on years of application research, Pumcups come in standard and special compositions for exceptional stability in handling almost *any* fluid you can name. For example . . . strong acids and alkalies, food products and even the most troublesome petroleum derivatives.

Big savings? We'll gladly refer you to Pumcup users whose problems are similar to yours. *They'll* tell you! Meanwhile, send for a free bulletin containing helpful, more detailed information: Bulletin 4401 on Pumcups for reciprocating pumps; Bulletin 4502 on Pumcups for air and hydraulic mechanisms. Just write to . . .

DARLING VALVE & MANUFACTURING CO.
WILLIAMSPORT 4, PA.

DARCOVA
THE ORIGINAL COMPOSITION CUP
PUMCUPS

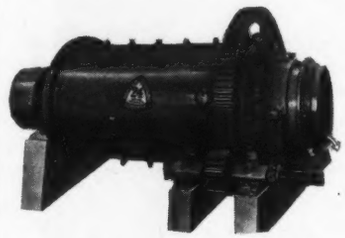
When inquiring check CP 3070 on handy form, pgs. 2-3

CONSTRUCTION

Modification of mill made easy by addition of extra sections

This 30" diameter convertible ball-rod mill is said to have been improved for greater convenience in modification and to facilitate repairs. Machine is available in 30 x 18", 30 x 36", 30 x 54", and 30 x 72" sizes. Any length can be increased to 72" by increments of 18" sections. Maximum size gear and pinion is supplied on all sizes so that the mill may be increased to 72" length at any time.

Type of discharge opening—small, medium, or large trunnion overflow — can be changed by installing the correct throat liner in discharge trunnion. Grate liners may be used by installing proper head and throat liners. No other changes need be made, according to manufacturer.



Any length of 30" diameter mill can be increased to 72" by addition of 18" sections

These features are said to make this mill a flexible unit for use in small milling plants or as a regrind mill. Ease with which the type of discharge may be changed is reportedly valuable in a regrind circuit where conditions may vary.

(Product of Denver Equipment Co., Dept. CP, 1400 17th St., Denver 17, Colo. . . . or for more information check CP 3071 on handy form, pages 2 and 3.)

Data on extruded plastic materials

Four-page, 2-color bulletin describes company's extruded plastic parts, and services offered. Parts include pipe, tube, and fittings. Bulletin on Extruded Plastic Materials is issued by Pyramid Plastics, Inc., Dept. CP, 554 W. Polk St., Chicago 7, Ill. When inquiring specify CP 3072 on form, pages 2 and 3.

If a TRUCK DRYER is Suitable for Your Product...

Send for a copy of this illustrated booklet. It describes the various styles of dryers and trucks, and the "National" formula for securing maximum speed, efficiency and economy in all drying operations.

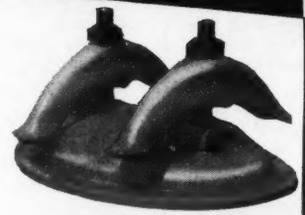
"National" Truck Dryers are being used successfully for chemicals, pharmaceuticals, ceramics, cosmetics, minerals, yarn, rayon cakes, tobacco, a variety of food products and small metal or mechanical parts. They are designed for either batch or continuous drying, with various methods of air circulation. Patented "Add-a-Unit" construction facilitates installation and provides for economical future expansion. The booklet gives complete details.

Chemical Dryers of All Types and Sizes — NATIONAL — Special Drying and Heating Equipment

THE NATIONAL DRYING MACHINERY CO.
2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 3073 on handy form, pgs. 2-3

LENAPE MANWAYS and FITTINGS



11 x 15" N Fitting.

A wide variety of access openings.

Lenape elliptical access openings (straight rings or flued and curved saddles) and fittings, of the pressure loaded or "self-energized" type are produced in sizes ranging from 4" x 6" to 18" x 24".

Typical Lenape Fittings
- 11 x 15" Type L 150 PSI in steel, Everdur, and 304 Stainless.
- 11 x 15" Type N 450 PSI for general application.
- 11 x 15" Type S 250 PSI with external split recessed clamp plate for paper machine dryers
- 12 x 16" Type N 450 PSI for general application.
- 12 x 16" Type HP 800 PSI for heavy duty.
- 14 x 18" 300 PSI Hinged for beverage tanks.
- 18 x 24" 200 PSI for large clean-outs.

Full details are found on pages 35-42 of Lenape Catalog 9-49

LENAPE HYDRAULIC PRESSING AND FORGING CO.
LENAPE HYDRAULIC PRESSING & FORGING CO.
DEPT. 100 WEST CHESTER, PA.
RED MAN PRODUCTS

When inquiring check CP 3074 on handy form, pgs. 2-3

BETTER,
FASTER,
SAFER,
plug valve lubrication
WITH DELTA
FITTINGS

The grease fitting on a plug valve is a small, unnoticed item, until it becomes defective — then it becomes a mighty mite. A bad fitting can injure a man, ruin a valve, or be responsible for serious loss in case of emergency. That's why you should standardize on DELTA FITTINGS — with double-check valves, one-piece steel bodies, and guaranteed not to leak at 15,000 lbs. pressure. No gaskets to wear or loosen causing leaks and locked couplers. And — DELTA is the only company that offers grease gun fittings for ANY lubricated plug valve.

The DELTA High Pressure GUN

Develops 10,000 lbs. pressure. Barrel tested to 30,000 lbs. Fast, positive prime, handles heaviest lubricants.

Get this CATALOG

Valuable, specific information on Delta Fittings, Gun, Automatic Lubricator, and Delta-Desco Lubricants for any valve service.

DELTA ENGINEERING SALES CO.

806 Louisiana Ave. Shreveport, La.
Sales Offices In All Principal Cities

DELTA
Plug Valve
LUBRICATION EQUIPMENT

Fittings — Guns — Lubricants
Automatic Lubricators

When inquiring check CP 3075 on handy form, pgs. 2-3

Condensation of vapors in pump prevented by gas ballast

Uses: Mechanical, high-vacuum pumps will pump condensible vapors, such as water vapor, without oil contamination or loss of pumping capacity, according to manufacturer.

Features: Pump prevents condensation of vapors by keeping vapors below condensation pressures. This is accomplished by use of gas ballast. A small

Gas ballast keeps vapors below condensation pressures in unit

quantity of air is bled into pump after intake has been completed and as compression is about to occur. Power requirements are said to be as low or lower than those for conventional mechanical pumps without this gas ballast feature.

Description: Basic pump units are imported from E. Leybold's Nachfolger of Cologne, Germany. American manufacturer then adds motors, pulleys, flanges, and controls to these units.

Rotary, gas ballast pumps are offered in single-stage units with capacities ranging from 2 to 400 cfm; compound units (i.e., two rotors on same shaft) with capacities from 2 to 15 cfm; and in combination units (in which two single-stage pumps are combined in series) with capacities from 30 to 400 cfm. Parts and service are available from American producer of these pumps.

(Product of National Research Corp., Dept. CP, Seventy Memorial Dr., Cambridge, Mass. . . . or for more information check CP 3076 on handy form, pages two and three.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

can be just as important to you!

Your life line . . . the single thing that keeps your plant operating at a profit . . . is efficient and continuous production. Your profits, employee morale, plant-community relations . . . all can be seriously threatened by inadequate dust or fume control.

KIRK & BLUM, for over 45 years, have been specialists in designing, fabricating and installing dust and fume control systems. From the time engineers arrive to consult, to the moment skilled erectors leave . . . your work is in the hands of one experienced, reliable organization.

Write The Kirk & Blum Mfg. Co., 3133 Forrer Street, Cincinnati 9, Ohio.

FOR CLEAN AIR . . . THE INVISIBLE TOOL

KIRK AND BLUM

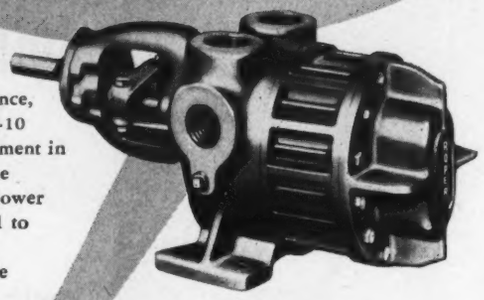
DUST AND FUME CONTROL

When inquiring check CP 3077 on handy form, pgs. 2-3

ROPER

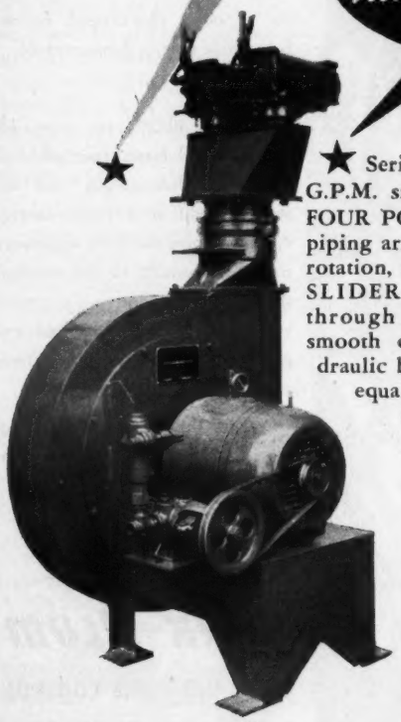
SERIES F PUMP . . .

Integral Part of the Hopkins Volcanic Burner System



Hopkins Volcanic Specialties, Inc., of Alliance, Ohio, uses the Roper F-10 Pump as original equipment in their burner system. The pump, driven off the blower motor, supplies fuel oil to the unit. Hopkins Volcanic Burners, adaptable to any size and design of dryer, are the result of 30 years experience in the combustion engineering field.

FACTS YOU WANT TO KNOW *About the Series F Pump*



★ Series F Pumps available in 1-300 G.P.M. sizes — pressures to 300 P.S.I. FOUR PORT DESIGN — eight optional piping arrangements, 4 CW and 4 CCW rotation, cuts installation time and costs. SLIDER COUPLING — on sizes 1 through 20 G.P.M. permits positive smooth drive and maintains axial hydraulic balance. HELICAL GEARS — of equal size, are heat treated and precision ground. Flange type bronze bearings give ample support to pumping elements. MODEL shown has Packed Box; also made with Mechanical Seal. Relief valve models available.

Send for Catalog 953

Geo. D. Roper Corporation
748 Blackhawk Park Avenue
Rockford, Illinois

ROPER *Rotary Pumps*

When inquiring check CP 3078 on handy form, pgs. 2-3

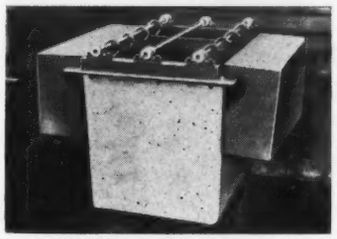
CONSTRUCTION

Fiberglas tank gives economy, chemical resistance

Uses: For use with all solutions generally applicable in plating field, with the exception of caustic cleaner and hydrofluoric acid.

Features: Fiberglas tanks are more economical than lined steel tanks and are equally impervious to chemical attack, according to manufacturer. Temperature of tank contents may be as high as 220°F.

Description: Tanks can be furnished in any size required. Fiberglas mat is impregnated with Vibrin resin and custom molded to exact size desired by customer. Standard finish is gray.



Temps of tank contents may be as high as 220°F

(Product of Hanson-Van Winkle-Munning Co., Dept. CP, Matawan, N. J. . . . or for more information check CP 3079 on handy form, pages 2 and 3.)

Coolant-lubricant covers many operations

Illustrated bulletin describes versatility and features of soluble oil for use in practically all types of metal cutting, grinding, and forming operations. Photos of typical applications show the wide range of both heavy and light operations accomplished with this coolant-lubricant — containing a multi-viscosity blend which enables it to handle the maximum range of speeds, feeds, and materials, according to manufacturer.

Bul SO53 is issued by Shear-Speed Chemical Products, Div. of Michigan Tool Co., Dept. CP, 7125 E. McNichols Rd., Detroit 12, Mich. When inquiring specify CP 3080 on handy form, pages 2 and 3.

9 Good Reasons why

corrosion-resisting Inco-Cast Fittings can solve your problem

Monel® - Nickel - Inconel®

1 **Resist most corrosives**
2 **Strong . . . tough . . . sound**
3 **Withstand high and sub-zero temperatures**
4 **Protect product purity**
5 **Pressure-tested**
6 **Economical in cost**
7 **All standard types and sizes in threaded and welding fittings**
8 **Fast service on rated orders to all points from conveniently located distributors' stocks**
9 **Special shapes and sizes made to order**

WRITE for price list catalog. Contains full information. Sent you promptly, and without obligation.

The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

When inquiring check CP 3081 on handy form, pgs. 2-3

precision instrument

for improved production

SPRAY NOZZLES alone can often materially control the costs and efficiency of a process or operation involving spraying. All Spraying Systems Spray Nozzles are precision instruments . . . with design based on years of research and experience in specialized hydraulics . . . and with manufacture maintained at precision tolerances. For proof let us give you the facts about Spraying Systems Spray Nozzles . . . the preferred nozzles today among equipment builders and engineering firms everywhere in industry.

WRITE FOR your copies of General Catalog No. 22 and Pneumatic Atomizing Nozzle Catalog No. 23. America's most complete spray nozzle reference manuals. Data Sheets supplied covering specialized applications.

SPRAYING SYSTEMS CO.
3216 Randolph Street • Bellwood, Illinois

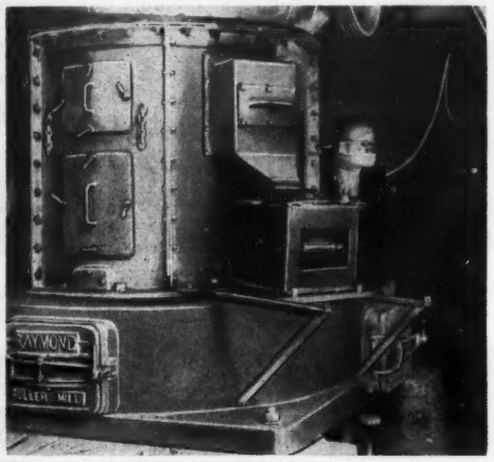
When inquiring check CP 3082 on handy form, pgs. 2-3

Magnetic impurities removed from materials before being ground to a fine powder

Uses: Permanent magnet separator unit, identified as Type SBD, is especially designed for removing iron from material discharged from the "throw out" of a Raymond Roller Mill.

Features: It is said that unit's advantage is removal of magnetic impurities before they are ground to a very fine powder. This separator removes iron generated inside of mill by friction.

Description: Separator contains permanent magnet drum and induction roller. It is completely self-contained and built in a housing of relatively small size. With SBD separator, purified material may be automatically returned to mill for further grinding



Magnetic separator shown in position on mill

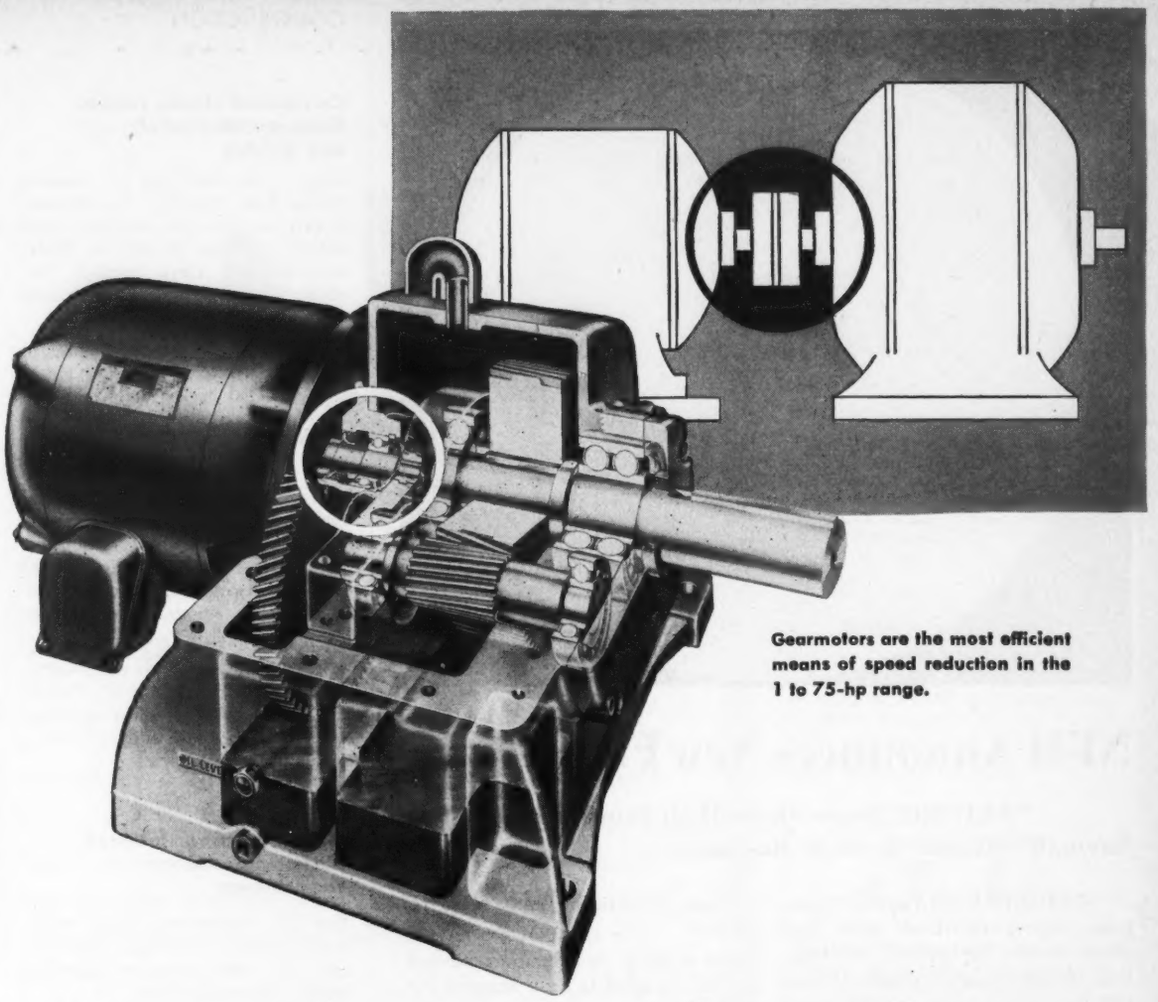
or discharged outside. Unit does not require supervision or periodical cleaning and may be adapted to many other applications at different points of material flow.

(Product of F. W. Shrader Co., Dept. CP, 5788 W. Washington Blvd., Culver City, Calif. . . . or for more information check CP 3083 on handy form, pages 2 and 3.)

Flame-resistant hydraulic fluid

Physical properties and specifications of tricresyl phosphate-based, flame-resistant hydraulic fluid are listed in 8-page booklet. Primarily for use in die casting equipment and hydraulically actuated equipment such as couplings, presses, riveting machines, rams, furnace doors, and welding machines — fluid also serves as an excellent lubricant for air compressors, gas and vacuum pumps.

Bul LHF-1 is available from Chemical Div., Celanese Corp. of America, Dept. CP, 180 Madison Ave., New York 16, N. Y. When inquiring specify CP 3084 on handy Reader Service slip between pages 2 and 3.



Gearmotors are the most efficient means of speed reduction in the 1 to 75-hp range.

Fewer moving parts mean less maintenance with *Life-Line* GEARMOTORS

Gearmotors have fewer moving parts than any other form of parallel-shaft speed reduction. There are fewer parts to wear out—to break—to get out of adjustment—to require servicing.

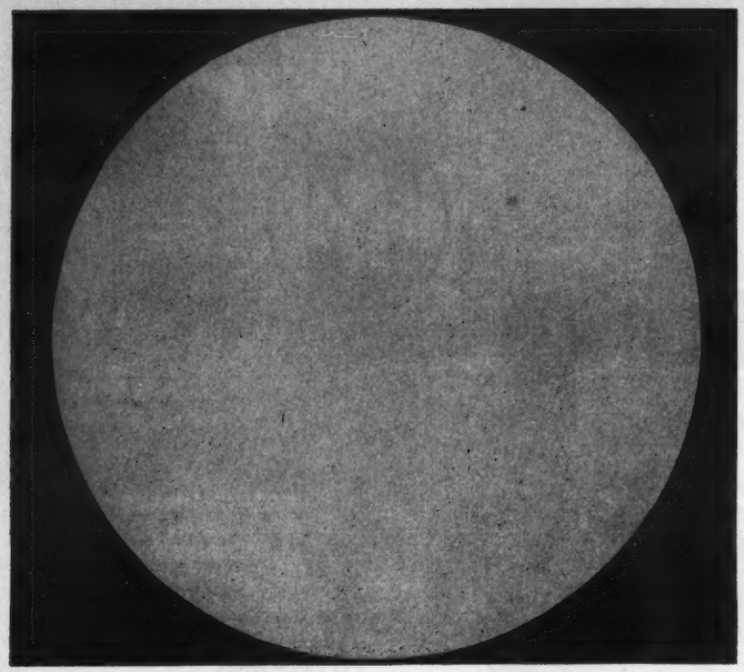
You get this simplicity of design with Life-Line Gearmotors. Input helical pinion is mounted directly on the motor shaft. No intricate coupling to wear—no misaligned shafts to cause breakdown—fewer bearings. The motor and gears are built as one integral unit.

When inspection and servicing are required, Life-Line's split gear housing simplifies the entire procedure. Simply by removing the top half of the gear case, the gears or the motor can be inspected or removed without touching the mounting bolts—without draining the oil—without disturbing the connected load. The complete job takes but a few minutes.

Ask your Westinghouse representative about all the Life-Line Gearmotor features. See why it pays to specify Westinghouse for your speed reduction needs. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-07311-A

YOU CAN BE SURE...IF IT'S Westinghouse

When inquiring check CP 3085 on handy form, pgs. 2-3



NFM Announces New Filter Paper

"NETONE" Paper Shows High Tensile and Bursting Strength — Good Chemical Resistance

"NETONE" Filter Paper is a neoprene impregnated kraft paper that offers decided mechanical and chemical advantages over standard filter papers.

When compared to 60-pound unbleach kraft "NETONE" Filter Paper shows a 500% increase in wet tensile strength, wet burst factor increases from 6 to 57 and there is a marked increase in abrasion and crease resistance.

Write us about your requirements and we will be glad to send samples for your testing.

...And for your filter cloth requirements, we weave VINCEL*, SARAN, DYNEL, NYLON, ORLON**, VINYON N† and GLASS. Samples sent on request.

Solution	60-Pound Kraft	Wet Strength Resin	Neoprene Treated (3%)
H_2O	0	72 hr.	86 hr.
10% HCL	0	6 min.	4 hr.
10% NaOH	0	6 hr.	72 hr.

*T.M.—Nat'l Filter Media Corp.
**T.M.—E. I. du Pont de Nemours Co.
†T.M.—Union Carbide & Carbon Corp.

Weavers of Industrial Filter Media for over Forty Years

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When inquiring check CP 3086 on handy form, pgs. 2-3

Compound cleans rubber floor matting safely and quickly

Uses: In particular, for cleaning rubber floor matting. In addition, it can be used for cleaning other rubber products, as well as linoleum, terrazo, vinyl, asphalt tile, enameled and painted surfaces, and wooden floors.

Features: Product is rapid in action, the time required for cleaning reported to be reduced to a matter of seconds. It is also safe to apply.

Description: Compound is in powder form and its chemical make-up is such that it efficiently removes organic and inorganic oils and greases. It is not caustic, and will not discolor, crack, or deteriorate rubber goods, according to manufacturer.

(Product of American Mat Corp., Dept. CP, 1730 Adams St., Toledo 2, Ohio . . . or for more information check CP 3087 on handy form, pages 2 and 3.)

Measured and marked plastic pipe offers convenience

Uses: Recommended for wells, water systems, drainage, irrigation, gas, air, and pure or corrosive liquid processing lines.

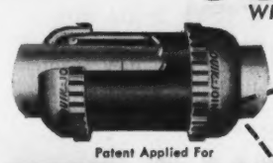
Features: Trade name is permanently marked on pipe in a contrasting color at exact 10′ intervals throughout the coil. This development is a convenience for both supplier and user. It enables dealers to easily count out any given amount of pipe without bothersome measuring devices and also gives a quick inventory of partly used coils.

In the field, installations are speeded up because any measurement can be quickly and accurately calculated to a fraction of an inch with an ordinary pocket rule, according to manufacturer.

Description: Pipe is made in one grade of 100% pure polyethylene and is non-toxic. Sizes are from ½ to 6″ with a complete range of fittings for making any connection.

(Product of The Plastex Pipe and Extrusion Co., Dept. CP, Columbus, Ohio . . . or for more information check CP 3088 on handy form, pages 2 and 3.)

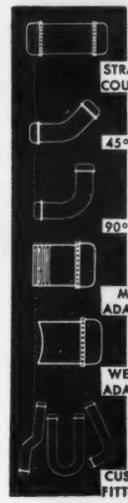
NOW - You Can JOIN PIPE WITH ONLY A WRENCH!



Patent Applied For

in less than a minute!

QUIK-JOINT



Thoroughly proven in a great many different applications, *QUIK-JOINT* cuts down time-consuming pipe connections from the usual 30-45 minutes to less than a minute!

You simply insert ends of pipe in a *QUIK-JOINT* and tighten with a wrench —that's all. No pipe threading! No cumbersome tools!

Write for Catalog!

For Working Pressures to 2000 P.S.I.

Sizes: ½" - ¾" - 1" - 1¼" - 1½"

QUIK-JOINT
COUPLING DIVISION
AUTOMATIC BENDING COMPANY
405 E. 159th ST. HARVEY ILLINOIS

When inquiring check CP 3089 on handy form, pgs. 2-3

U.S. TOTALLY-ENCLOSED Explosion-Proof MOTORS

SAFE *for dangerous damp and dusty locations*

Class I—Group D
Class II—Groups F-G with or without fan

Request Bulletin

U.S. ELECTRICAL MOTORS, Inc.
BOX 2058, LOS ANGELES 54, CALIFORNIA MILFORD, CONN.

When inquiring check CP 3090 on handy form, pgs. 2-3

Provides complete unloading of engine at high-speed, no-load conditions . . .

2-stage hydraulic torque converter has low hp absorption & cooling requirements

Uses: As a torque converter, designed to fill the gap in industrial hydraulic drives.

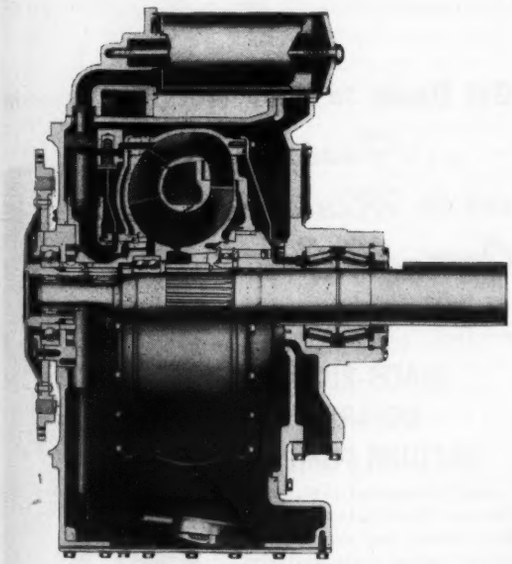
Features: Free-wheel reaction or stator blades provide complete unloading of engine at high-speed, no-load conditions . . . with low hp absorption for greater economy, and with minimum cooling needs.

Description: Converter develops up to 4:1 torque multiplication at stall, combined with progressively increasing engine speed during acceleration and uniform pull-down under load.

Basic converter unit is Model S, which offers a standard spider drive input, and is equipped with a built-in converter charging pump around input shaft — just adjacent to spider drive. Inlet and outlet connections are provided for piping converter fluid to and from a cooler, which can be either an oil-to-water heat exchanger or an oil-to-air radiator.

Two types of output shafts are available: 1) straight shaft extension type, and 2) flanged shaft type, to permit use of a "U" joint for in-line drives.

Manufacturer has also designed two-stage converter in a disconnecting type, called Model SD. Essentially

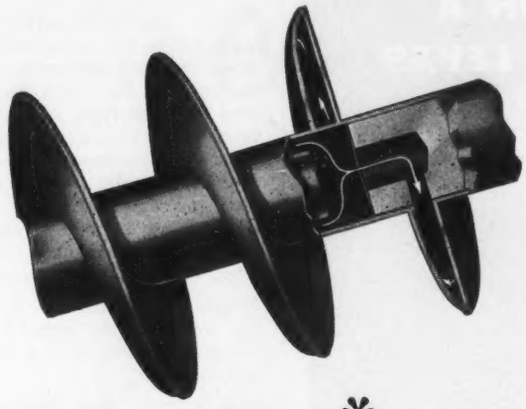


Two-stage converter with spider drive

the same as basic unit described above, this model incorporates additional design features of: 1) quick-release dump valves on rotating turbine wheel, to permit release of oil from within converter circuit — providing a complete disconnect feature; and 2) a two-position control valve, located at top of stationary converter housing—for actuation of the dump valves.

(Products of Twin Disc Clutch Co., Hydraulic Div., Dept. CP, Rockford, Ill. . . . check CP 3091 on handy form, pages 2 and 3.)

A great new advancement in heat exchangers...



THE **holo-flite*** PROCESSOR
(HOLLOW-FLITE)

A simpler, more compact way to cool slurries, solids or pastes—in continuous flow!

Do you have processes where slurries, solids, pulps or pastes must be cooled or cooked? Do you know you can now handle such processes—*in continuous flow*—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

The newly-developed HOLO-FLITE Processor is the answer!

what IT IS!

Basically the HOLO-FLITE consists of two or more flights of hollow-bladed screw conveyors. The product to be processed moves in a trough around the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums—*as the product is continuously moved along in a bulk-flow without interruptions!*

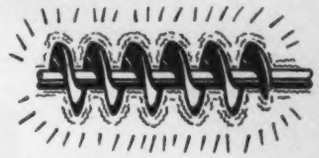
Get the complete story on HOLO-FLITE *savings and how this new advancement can simplify your processing operations. It is backed by the same organization that pioneered* COTTRELL *Precipitators and* MULTICLONE *Collectors—your assurance of complete dependability.*

DETAILED INFORMATION!
New 8 page bulletin describing HOLO-FLITE features and applications will gladly be sent on request. Write, wire or phone for your free copy!

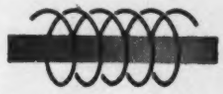
*Reg. T.M.

why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations...



ITS LARGE HEAT-TRANSFER SURFACE requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



ITS SLOW ROTATION IS SO GENTLE that granular and powdered solids are handled with no dusting—little or no particle abrasion. Result—no dust recovery problems . . . simple, inexpensive installation.

IT IS ADAPTABLE to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.

IT CAN BE DESIGNED to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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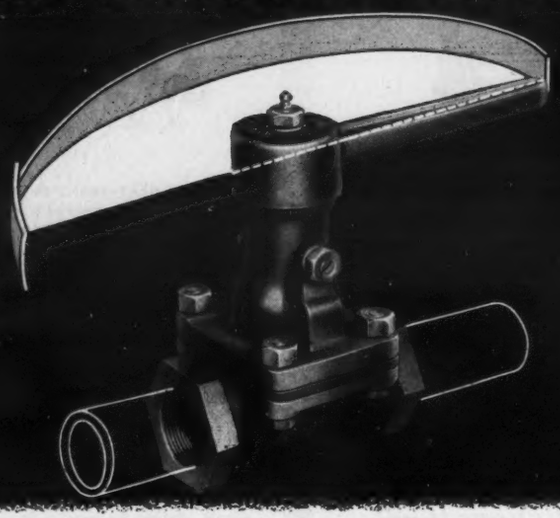
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 3092 on handy form, pgs. 2-3

with this corrosion resistant valve . . .

YOU GO FROM FULL OPEN TO FULL CLOSED IN A 180° SWING OF THE LEVER



HILLS-McCANNA

Quick Opening

SAUNDERS PATENT DIAPHRAGM VALVES

Where you must combine the ability to handle tough services with quick opening—quick closing characteristics, Hills-McCanna Lever operated Diaphragm Valves are the answer. The lever action is smooth and positive. An adjustment for holding the handle in an intermediate position provides throttling when required. Available with choice of fifteen diaghragm materials including rubber, neoprene, polyethylene, Kel-F and Teflon. Choice of over fifty body materials that include rubber, glass, lead, and plastic linings, any machinable alloy and plastics. Dependent upon materials and size, Hills-McCanna Saunders Patent Valves are suitable for temperatures to 400°F., pressures to 150 psi. Write for descriptive literature. HILLS-McCANNA CO., 2370 W. Nelson St., Chicago 18, Illinois.

HILLS-McCANNA

saunders patent diaphragm valves

Also Manufacturers of Proportioning Pumps

Force Feed Lubricators • Magnesium Alloy Sand Castings

When inquiring check CP 3093 on handy form, pgs. 2-3

CONSTRUCTION

Multi-purpose cleaning compound inhibits rust on metals

Uses: As a multi-purpose cleaning agent — for use in mechanical power washing equipment for removing oil, dirt, chips, and abrasives from all types of metal surfaces. Other uses include: cleaning before phosphatizing; maintenance cleaning of paint; wetting out of dust and paint overspray; conditioning hard water to prevent scale or rust in mechanical washers, steam equipment, and grinders.

Features: Dust-free, granular, and water soluble, material is low foaming, preventing lime scale deposition.

Description: Rust-inhibiting metal cleaning compound may be applied in power washers, tanks, or spray booths at concentrations of ½ to 4 oz per gal of either hot or cold water. Rinsing after cleaning is not necessary, though with some applications it might be advantageous to rinse.

(Powrite cleaning agent is a product of Dept. 4A, Whitfield Chemical Co., Dept. CP, 14225 Schaefer Hwy., Detroit 27, Mich. . . . or for more information check CP 3094 on handy form, pages 2 and 3.)

Arc-quenching action is featured by line of safety switches

Uses: Safety switch line is designed to meet all but the most severe operating demands, wherever safety switches are used.

Features: Line incorporates a pole unit which is, in effect, a self-contained switch. This unit, it is said, features an arc-quenching action similar in principle to the arc-extinction features of modern circuit breakers.

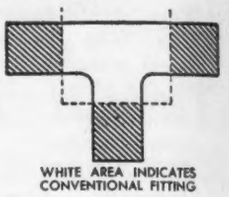
Description: Switches are available in ratings of 30, 60, 100, and 200 amp; 240 and 600 v; 2, 3, and 4 poles. Switch has rapid make-quick break action, interlocking cover and hp ratings. It meets NEMA Type A standards and is UL approved.

(Standard Duty HCI safety switches are products of Trumbull Electric Dept., General Electric Co., Dept. CP, Plainville, Conn. . . . or for more information check CP 3095 on handy form, pages 2 and 3.)

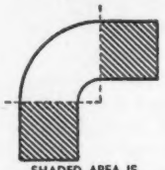
How the *Speedline* "TANGENTIAL FEATURE" cuts stainless piping costs

Now you can save up to 50% on corrosion-resistant lines by using light wall stainless pipe and versatile *Speedline* Fittings.

The added straight section of corrosion-resistant *Speedline* Fittings permits attaching unions or flanges without fouling . . .



WHITE AREA INDICATES CONVENTIONAL FITTING



SHADED AREA IS "TANGENTIAL FEATURE"

. . . reduces number of welds required . . . simplifies installation . . . eliminates angle joints.

SEND FOR LATEST INFORMATION

Write a note on your company letterhead to get the complete story on the many cost-saving advantages of the *Speedline* System for process piping.

***Speedline* distributors are located in principal cities from coast to coast**

HORACE T. POTTS CO. *Since 1815*

502 Erie Avenue, Philadelphia 34, Pa.

When inquiring check CP 3096 on handy form, pgs. 2-3

Get Down to Your Working Vacuum

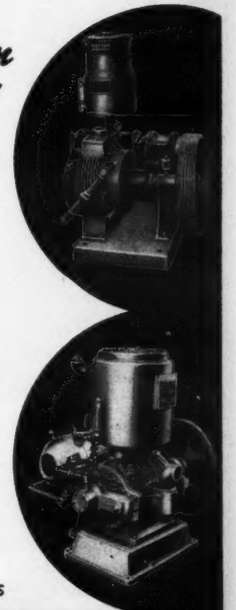
. . . Faster

and at *Minimum Over-all Cost!*

You get speedier, more dependable "pump-down" with

BEACH-RUSS ROTARY VACUUM PUMPS

. . . and because of their superior mechanical efficiency they insure you against high maintenance costs and limited service life.



Type SS (upper)—for vacuum up to 5 mm on tight systems, for dry or semi-wet work. Capacities 6 to 375 c.f.m. Type RP (right) — for vacuum up to 10 microns or better on dry or wet work. Capacities 17 to 845 c.f.m.

WRITE FOR BULLETINS ON BOTH TYPES

BEACH-RUSS COMPANY

46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 3097 on handy form, pgs. 2-3

Economy, improved coverage in spray-coating with heated paint cup . . .

fits suction-type spray guns of major suppliers

Uses: For applying lacquer and synthetic paints in heated form — also for application of preventatives, preservatives, lubricants, and oils.

Features: According to manufacturer, use of cup saves on material and thinner, improves one-coat coverage, helps eliminate sags, runs, and "orange peel." Unit will fit any suction-type spray gun of major suppliers. Outer surface of the heated cup is said to remain cool at all times.

Description: Cup has a capacity of one full qt. It is constructed in three pieces — inside cannister, outside shell, and base plate. All the heat is applied laterally to the walls of inside cannister. Heating element draws 2.4 amp at 115 v. It is made of high grade nickel chrome resistant ribbon, insulated with strips of mica and encased in an aluminum sheath. Element assembly is tightly banded to inner cup to assure immediate conduction of heat to paint.

Outer surface of cup remains cool at all times in operation

Asbestos covered nickel wire is used for leads from element. Whole electrical assembly is fused with a low temperature heat fuse, assuring safety of device.

A quart of material can be heated from room temperature to 160°F in five minutes, according to manufacturer. Double cannister construction is said to hold temperature above 150°F after unit has been disconnected from electrical outlet. Yet, outer surface of cup is said to remain cool to the touch at all times.

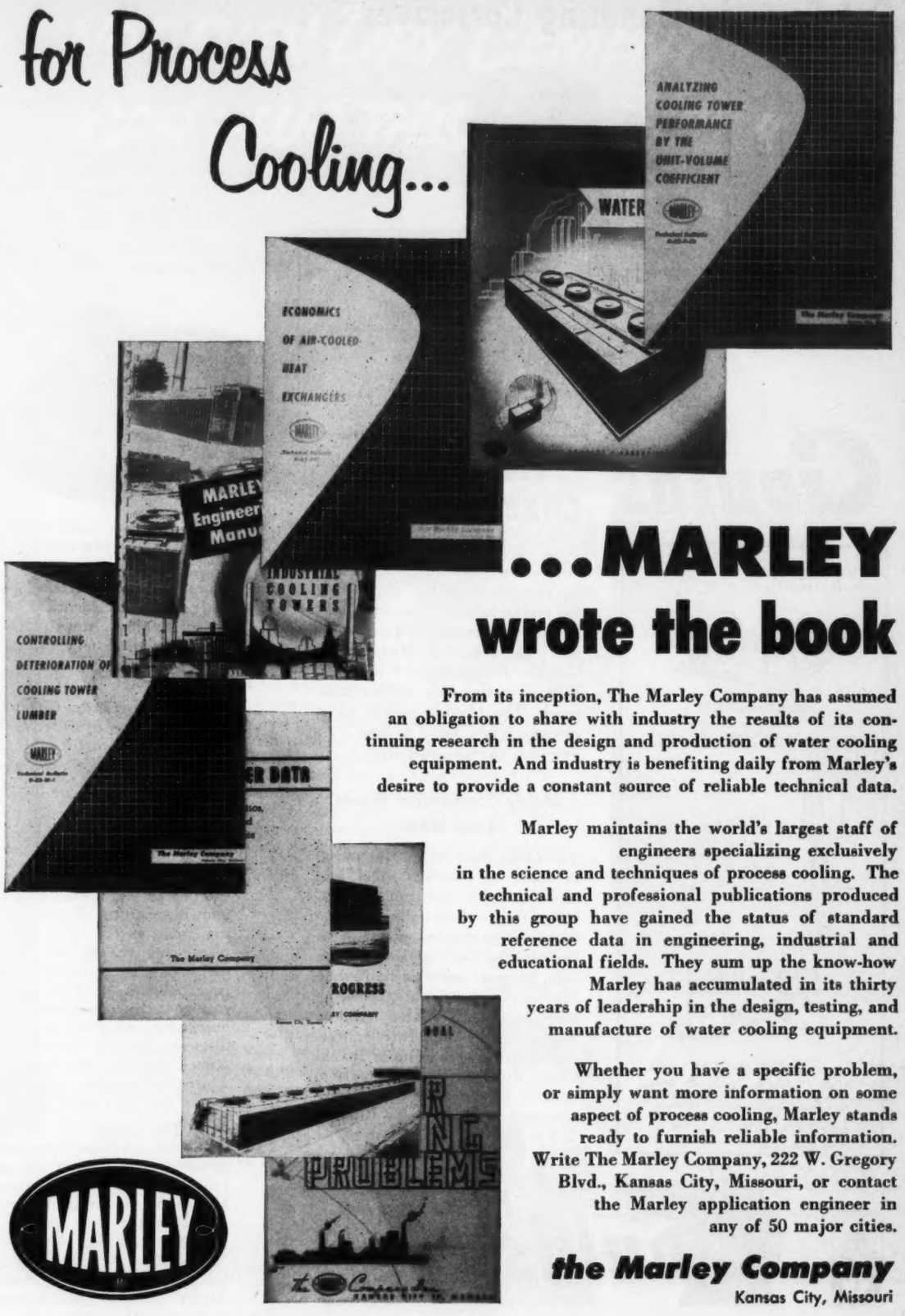
(Product of Pol-Flo Paint Sprayer Corp., Dept. CP, 2622 Stockton Blvd., Sacramento, Calif. . . . check CP 3098 on handy form, pages 2 and 3.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with Putman Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS

for Process Cooling...


ANALYZING COOLING TOWER PERFORMANCE BY THE UNIT-VOLUME COEFFICIENT
WATER
ECONOMICS OF AIR-COOLED HEAT EXCHANGERS
INDUSTRIAL COOLING TOWERS
CONTROLLING DETERIORATION OF COOLING TOWER LUMBER
PROBLEMS

...MARLEY wrote the book

From its inception, The Marley Company has assumed an obligation to share with industry the results of its continuing research in the design and production of water cooling equipment. And industry is benefiting daily from Marley's desire to provide a constant source of reliable technical data.

Marley maintains the world's largest staff of engineers specializing exclusively in the science and techniques of process cooling. The technical and professional publications produced by this group have gained the status of standard reference data in engineering, industrial and educational fields. They sum up the know-how Marley has accumulated in its thirty years of leadership in the design, testing, and manufacture of water cooling equipment.

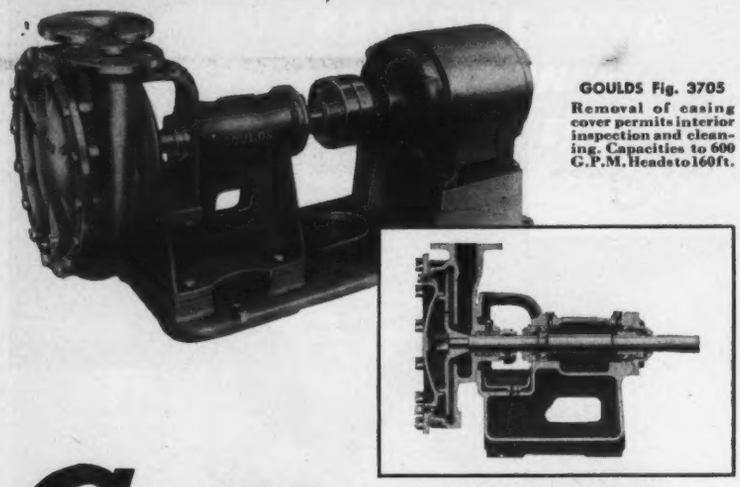
Whether you have a specific problem, or simply want more information on some aspect of process cooling, Marley stands ready to furnish reliable information. Write The Marley Company, 222 W. Gregory Blvd., Kansas City, Missouri, or contact the Marley application engineer in any of 50 major cities.

MARLEY

the Marley Company
Kansas City, Missouri

When inquiring check CP 3099 on handy form, pgs. 2-3

Cut Costs in Handling Corrosives . . .



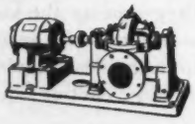
GOULDS Fig. 3705
Removal of casing cover permits interior inspection and cleaning. Capacities to 600 G.P.M. Heads to 160 ft.

Goulds CENTRIFUGAL CHEMICAL PUMPS

Other GOULDS for General Industrial Use

GOULDS Fig. 3169
Single stage centrifugals for general processing purposes. Capacities to 1100 G.P.M. Heads to 180 ft.

GOULDS Fig. 3047
Vertical sump pump with nonclogging impeller for water containing large solids or fibrous materials.



GOULDS Fig. 3405
Highly efficient, compact new pump for all general liquid handling applications. 19 sizes. Capacities from 200 G.P.M. to 6400 G.P.M. Heads up to 260 ft.

Here's how an alert plant engineer cut pumping costs by 75%: When the pumps he was using to handle a highly corrosive liquid wore out, he replaced them with Goulds Centrifugal Chemical Pumps, *costing only one-fourth as much*. The Goulds pumps have already lasted *twice as long* . . . and they're still going strong.

Sturdy Construction Means Long Wear

The entire fluid end of this pump is made of stainless steel and mounted on a cast iron support. Other material and alloys can be supplied for wetted parts. With the stuffing box on the suction side, pressure on it is limited to the suction head only, assuring long packing life and freedom from excess leakage. Interchangeable parts assure reduced inventories. For complete information, contact your nearby Goulds representative or write for Bulletin 725.3.

MEMBER

Goulds PUMPS INC.
Seneca Falls New York

When inquiring check CP 3100 on handy form, pgs. 2-3

CONSTRUCTION

Jacketed pipe fitting has weld ends

Uses: As a pipe fitting — jacketed 90° elbow.

Features: Fitting has weld ends.

Description: Jacketed 90° elbow with weld fittings is available in nominal pipe sizes from 1 to 12"; jacket inlet sizes of ½ and ¾". All dimensions and tolerances of elbow comply with ASA B16.9.

Photograph shows jacketed 90° elbow with weld ends

Pressure-temperature ratings of welding elbow are identical with those of seamless pipe of same size and thickness. Approximate weight in pounds is from 6 (for 1" pipe) to 385 (for 12" pipe).

(Product of Red Jacket Co., Inc., Dept. CP, Investment Bldg., Pittsburgh 22, Pa. . . . or for more information check CP 3101 on handy form, pages 2 and 3.)

Discusses plating waste treatment

Information on newer applications in treatment of electroplating rinse waters in industrial plants through the use of ion exchangers is presented in 8-page bulletin. A table, charts, cost and space comparison requirements and other data supplement material which describes some of the forms in which industrially important metals can be economically recovered.

Bul 3865, preprint of a paper given at the Eighth Purdue Industrial Waste Conference, May 1953, is available from The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N. Y. When inquiring specify CP 3102 on handy Reader Service slip between pages two and three.

for the exacting answers to your filtration problems . . .

SPERRY
FILTER PRESSES

When you consider the many advantages of Sperry Filter Presses, you can quickly understand why hundreds of manufacturers throughout the country depend on Sperry for solving industrial filtration problems of every kind.

Sperry Filter Presses offer greater economy — low first cost, minimum maintenance and long life . . . require less floor space . . . handle any kind of filterable mixture . . . and use practically any kind of filter material. For the complete story, ask for the big free Sperry catalog.

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When inquiring check CP 3103 on handy form, pgs. 2-3

Safety GRIP-STRUT
gives Maximum Strength with Minimum Weight

NON-SKID
RUGGED
LOW COST
VERSATILE

A Globe patent feature (Patents Pending)

Not welded, not riveted, not expanded, all one piece of material, gives a non-skid surface in *all* directions, a diamond shaped pattern with open space area in excess of 75% of surface, easily cleaned, sanitary. Simple to install, ideal for on-the-job fabricating, replaces existing grating with no supporting structural changes necessary. Strong yet light in weight. Ideal for stair treads, work platforms, catwalks, flooring, running board steps, in fact for any purpose where safe flooring is a factor. Available in steel or aluminum. Write for new catalog, showing new low prices, methods of application, typical installations and list of nationally known users.

Distributors in all principal cities.

GRIP-STRUT division
THE GLOBE COMPANY
Manufacturers since 1914
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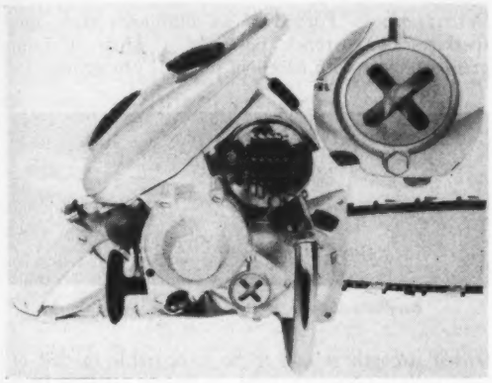
When inquiring check CP 3104 on handy form, pgs. 2-3

Mechanical strain, heat will not craze plastic oil sight window on power, chain saw

Portable power chain saw features an oil sight window of cast plastic. This clear, rigid sheet will not craze under the heat of the saw gear-case, because of mechanical strain, or through being in contact with hot oil, according to manufacturer. In addition, it combines in one material, some of the best features



Plastic forms a tough, non-shattering oil sight window

of both thermosetting and thermoplastic substances. Plastic can be hot formed and fabricated as easily as most thermoplastics, yet it offers durability normally found only among thermosetting resins. It forms a tough, non-shattering window suitable for this rugged, outdoor tool.

(Plastic used for oil sight window, on power chain saw made by McCullough Motors Corp., Dept. CP, Los Angeles, Calif., is COCOR CO-3, a product of Cast Optics Corp., Dept. CP, Riverside, Conn. . . . or for more information check CP 3105 on handy form, pages 2 and 3.)

Two steam-guns operated by giant-size cleaner

Uses: For heavy duty cleaning.

Features: Unit is large enough to operate two steam-guns. It will deliver 200 gal of combined saturated steam and cleaning detergent per hour. A force of 130 lb pressure drives this cleaning spray in a blast that quickly cuts off dirt, grease, or other objectionable matter. Full steam is generated from cold water in only two minutes, according to manufacturer's report.

Description: Safe and simple operation of unit is assured by fact that two electrical switches are the only controls. Unit is 59″ high, 57″ long, 30″ deep, and weighs 1050 lb. It is available either as a stationary or portable model.

(Product of Quick Charge, Inc., Dept. CP, 1750 N.E. 10th St., Oklahoma City, Okla. . . . or for more information check CP 3106 on handy form, pages 2 and 3.)

NOT EVEN DRY CEMENT CAN PLUG THIS FLEX VALVE!
At Porete Manufacturing Co., North Arlington, N. J., where precast concrete roofing slabs are made, production depends on a constant supply of dry cement, unloaded through a pipe line under pressure. Using a rotary plug valve, it took 3 men an 8-hour day to handle 70 tons. Frequently the valve jammed after only half an hour of operation, making it necessary to force the action with a bar. Often, in cold weather, the valve had to be heated. Then Porete discovered Flex Valve. For more than two years the Flex Valve shown here has given trouble-free service. One man now controls the diaphragm-operated mechanism with a simple lever. If you have a problem in controlling the flow of any hard-to-handle fluid, send for Catalog No. FL 382. B
Exclusive FLEX VALVE Features
(Pat'd & Pat. Pending)
• Will outwear any metal valve on abrasive service. Proven minimum 11 to 1 life over metal • Full pipe capacity • Will not freeze up in outdoor service • Excellent control characteristics in first ⅓ of trave • Complete closure for bubble-air tightness • Tight on grits up to ⅛" • No obstructions, pockets, or internal parts • Valve body available in pure gum rubber, neoprene, butyl, buna-n, buna-s, food stock and special compounds.
YOUR MONEY BACK IF IT PLUGS
Representatives in Principal Cities
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affiliates:
When inquiring check CP 3107 on handy form, pgs. 2-3

CHROMALOX

Electric Heaters

STRIP HEATERS

In straight lengths, formed or "finned" for conduction or convection heating. Industry's rugged and versatile heat source for many uses.

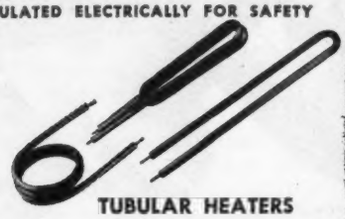
CARTRIDGE HEATERS

Installed in an instant in drilled holes for heating dies, platens, moving parts, rolls, molds, etc. Types available for immersion heating in liquids.

SHEATHED IN METAL FOR STRENGTH—INSULATED ELECTRICALLY FOR SAFETY

IMMERSION HEATERS

For heating water, oil and other liquids. Wide variety of types and sizes for portable or permanent installations, with or without built-in thermostats.



TUBULAR HEATERS

Straight lengths or tailored to any desired shape. For heating liquids, solids or gases by conduction, convection or radiation. Many sheath types.

Your LOW COST SOLUTION to processing heat problems!

Chromalox Electric Heaters give you quick, on-the-spot heat for a wide range of uses. They provide dependable, efficient, economical around-the-clock service in applications requiring continuous, accurately controlled temperatures. Thousands of plants in all industries have found Chromalox Heaters the low cost solution for heating liquids and gases; for heating dies, platens, moving parts; for superheating steam and pre-heating oil; in fact—for almost every industrial application using heat.

CHROMALOX

OFFERS YOU THE MOST IN ELECTRIC HEAT

Selection . . .

Over 15,000 types, sizes and ratings fill most applications needing heat up to 1100° F.

Engineering . . .

Research, development and technical personnel provide a vast reservoir of industrial heating know-how.

Experience . . .

World's largest manufacturer of electric heating units exclusively. 35 years of designing and manufacturing skills.

Service . . .

Over 130 field engineers in 36 key cities give on-the-job assistance and counsel.

10-74

YOURS
without obligation

Catalog 50 is a storehouse of valuable information and data on many of the 15,000 Chromalox Electric Heating Units. Write today for your copy.

CHROMALOX
Electric Heat for Modern Industry

EDWIN L. WIEGAND COMPANY, 7517 THOMAS BOULEVARD, PITTSBURGH 8, PA.

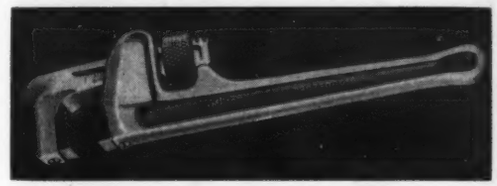
When inquiring check CP 3108 on handy form, pgs. 2-3

Economy stems from removable jaw inserts on pipe wrench

Uses: As a pipe wrench.

Features: Beryllium-copper jaw inserts on wrench are removable and interchangeable. When teeth become worn, insert is merely removed and another ordered from stock. Removable jaw inserts of steel can also be supplied where spark-resistant, corrosion-resistant, and non-magnetic properties of beryllium-copper are not required.

Description: Forged of an aluminum alloy, this spark-resistant wrench possesses a dense uniform grain structure with excellent physical properties. Its



Beryllium-copper or steel jaws are available

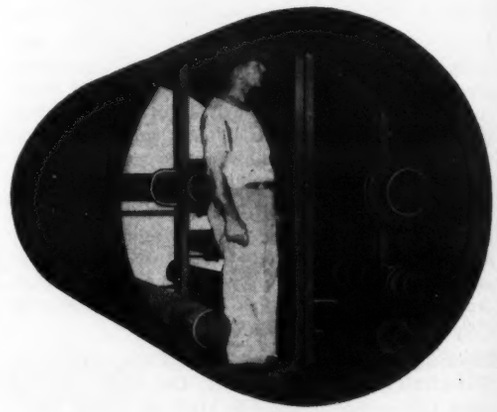
tensile strength is said to be comparable to that of steel tools. Extremely light, its weight range is from 15 ounces for the 10″ size to only 128 ounces for the 36″ size.

(Product of Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. . . . or for more information check CP 3109 on handy form, pages 2 & 3.)

Diameters in prefabricated conduits range from 3 ft to 7 ft . . .

allow room for pedestrian passageway or conveyor systems between buildings

Uses: Large diameter conduit system was developed for protection of underground distribution piping and other utility services. It is designed to meet all the service tunnel requirements of industry.



Ample walk-through space may be provided in large-diameter conduits

Features: Prefabricated conduit diameters range from 3 ft to 7 ft, depending on the nature and number of services to be housed. Ample walk-through space may be provided in large-diameter conduits, which makes possible periodic inspection, maintenance, or alteration of the interior services, as well as allowing room for pedestrian passageway or conveyor systems between buildings if desirable.

Description: Known as the Utilidor, system is completely prefabricated to job requirements with distribution piping for steam, condensate, water lines, fire lines, or process purposes. All equipment is in place and insulated where required—including traps, valves, and expansion devices. Provision may also be made for electrical and communication cables, ceiling lights, and other fittings.

Heavy-gage housing is constructed of corrugated ingot iron conduit, hot-dip galvanized and thoroughly protected with asphaltic or phenolic resin coatings. Conduits are shipped in easily-handled units approximately 21 ft long with simple joint connections and fittings, such as tees and elbows, prefabricated to fit exactly into conduit runs.

(Product of The Ric-Wil Co., Dept. CP, Union Commerce Bldg., Cleveland 14, Ohio . . . or for more information check CP 3110 on handy form, pages 2 and 3.)

Revised work on air purifying covers late developments

First published in 1944, 76-page bound book on air purification has been completely revised. While retaining and elaborating the basic principles of this science, the reference work now includes discussion of latest developments in the field. For example, a new section covers catalytic combustion as a means of controlling odors by converting them to odorless carbon dioxide and moisture by burning methods.

Emphasis is placed on the use of activated carbon "air recovery" equipment which adsorbs odorants, but much is presented which is of value in connection with air purification in general. For instance, basic factors and procedures are discussed, and savings resulting from recovery of contaminated air for re-use are calculated. One chapter is devoted to a description of typical installations of activated carbon type equipment.

A data section, starting on page 61 and running to end of the book, carries charts and tables of interest to the man designing an air purification system. Included here is a territorial climatic table; charts for determining Btu to heat air, and refrigeration to cool air, through various wet bulb temperatures; psychrometric charts for normal and low temperatures; heating values of fuels; allowable concentrations of toxic substances for human beings; and odor threshold concentrations.

"Air Conservation Engineering" can be obtained by remitting $5.00 direct to Connor Engineering Corp., Dept. CP, Shelter Rock Lane, Danbury, Conn. When inquiring specify CP 3111 on handy form, pages 2 and 3.

YOU CAN PUMP IN CONTROLLED VOLUME

HYDROCHLORIC ACID... ALL CONCENTRATIONS

CHLORINATED HYDROCARBONS

CORROSIVE METALLIC SALT SOLUTIONS

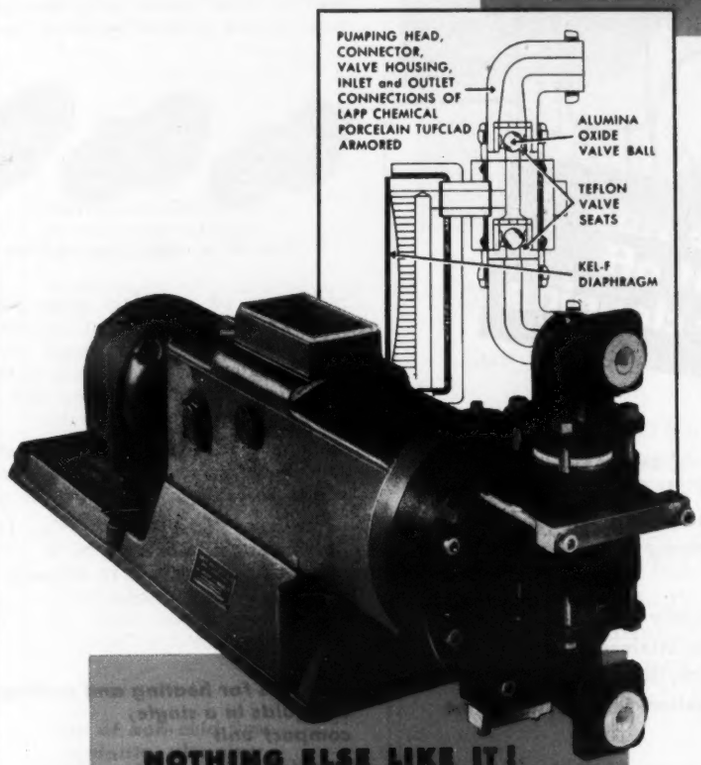
DILUTE ACIDS

MIXED ACIDS

WITH

Lapp PULSAFEEDER

COMPLETELY NON-METALLIC CONSTRUCTION


PUMPING HEAD, CONNECTOR, VALVE HOUSING, INLET and OUTLET CONNECTIONS OF LAPP CHEMICAL PORCELAIN TUFCLAD ARMORED
ALUMINA OXIDE VALVE BALL
TEFLON VALVE SEATS
KEL-F DIAPHRAGM

NOTHING ELSE LIKE IT!

Lapp Pulsafeeder is the combination piston-diaphragm pump for controlled-volume pumping of fluids. Reciprocating piston action provides positive displacement. But the piston pumps only an hydraulic medium, working against a diaphragm. A floating, balanced partition, the diaphragm isolates chemical being pumped from working pump parts —eliminates need for stuffing box or running seal. Pumping speed is constant; variable flow results from variation in piston-stroke length—controlled by manual hand-wheel, or, in Asto-Pneumatic models, by instrument air pressure responding to any instrument-measurable processing variable.

Solid Lapp Chemical Porcelain, combined with parts of alumina ceramic, teflon and Kel-F plastics, is used for the liquid end of this model of Lapp Pulsafeeder. All parts which can come in contact with liquid being pumped are non-metallic, chemically inert. Thus, positive-displacement metered pumping of "hard-to-handle" corrosive chemicals is made certain and permanently trouble-free.

WRITE FOR BULLETIN 300

with typical applications, flow charts, description and specifications of models of various capacities and constructions. Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Division, 101 Wilson Street, Le Roy, New York.

When inquiring check CP 3112 on handy form, pgs. 2-3

ELLIOTT TWIN STRAINERS
give double-barreled protection

SIZES AND BASKET MESH TO SUIT THE NEED

Fourteen sizes—1" to 24". Basket perforations, 1/32" to ⅜". If finer mesh is desired, basket can be lined with wire cloth. You get the straining service you need with Twin Strainers.

There is practically never any need to shut down a Twin Strainer. It provides its own standby service, thrown into operation by the two-way valves which shut off the fouled chamber.

For over a generation, Twin Strainers have been standard equipment in many industries. Now redesigned with many maintenance-saving features. Get the facts —write for the Twin Strainer Bulletin.

A-317

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When inquiring check CP 3113 on handy form, pgs. 2-3

Internal parts are interchangeable between three valve types . . .

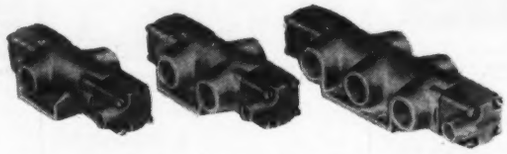
may be completely disassembled without disturbing pipe connections

Uses: For basic valve applications involving air, oil, or water.

Features: All internal parts are interchangeable between the three types and valves can be completely disassembled without disturbing pipe connections. Only a screw driver is needed.

Description: Basic valves, ⅜ and ½ NPT sizes, are available in two-, three-, and four-way types. Hand, cam, pilot, or foot actuating devices with or without spring return can be used singly or in dual combination to meet any actuating need.

Anti-extrusion arrangement of all the kinetic O-ring seals in valves assures airtightness after more than three million cycles of operation, and makes it impossible to cut seal rings under normal operating pressures from 0 to 200 psi, according to manufacturer. Balanced pressure spool design results in light actuating forces. Free flow of material through valves is facilitated by the fact that transverse flow corresponds to pipe size of valve.



From left to right, 2-, 3-, and 4-way type valves

For ease of installation, all valve ports are threaded and plainly marked. Valves are compact and are said to be easily mounted in small spaces.

(Product of Versa Products Co., Inc., Dept. CP, 249 Scholes St., Brooklyn, N. Y. . . . or for more information check CP 3114 on handy Reader Service slip, pages two and three.)

Provides for heating and cooling of liquids in a single, compact unit

Manufacturer's line of combination liquid cooler-heaters have separate copper refrigerant circuit, copper or stainless steel liquid circuit, and heating element cast within a single aluminum block. Heating element is encased in a steel sheath filled with magnesium oxide. High conductivity of aluminum casting is helpful in making this unit very efficient.

Suitable for photographic and X-ray film processing laboratories, and the like, units are said to assure uniform outlet temperatures the year around. Manufacturer also points out that there is no maintenance expense, installation is simple, and solid cast-aluminum assures long life of unit.

(Products of The Heat-X-Changer Co., Inc., Dept. CP, Brewster, N. Y. . . . or for more information check CP 3115 on handy form, pages 2 and 3.)

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HILCO OIL RECLAIMER

VACUUM for PUMP USERS . .

A simple, economical and efficient method of restoring contaminated lubricating and sealing oil to the full value of NEW OIL. The HILCO will produce and maintain oil free of solids, gums, water and gases in a continuous, all-electric, automatic operation.

Be SURE of clean oil in your HIGH VACUUM PUMPS

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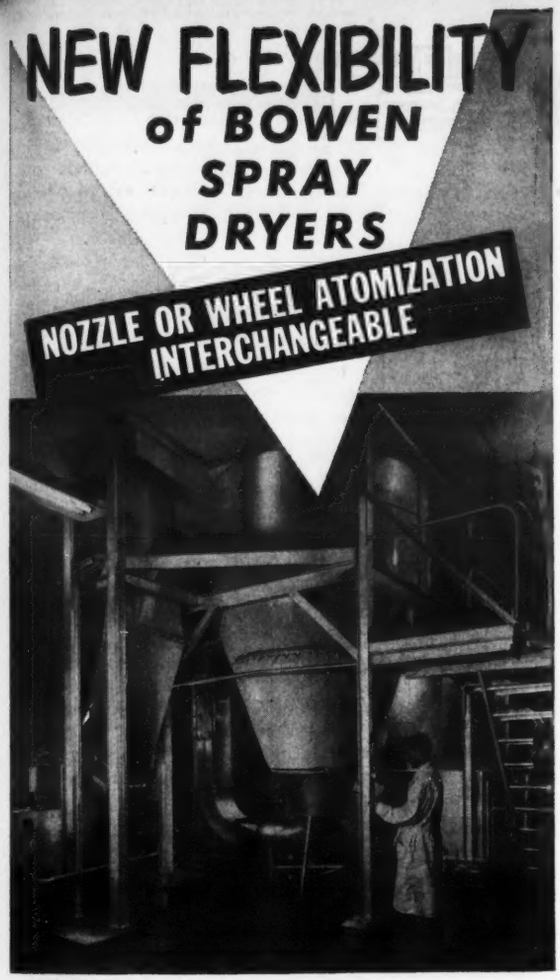
990 Bay St., Toronto, 3464 Park Ave., Montreal

When inquiring check CP 3116 on handy form, pgs. 2-3



Now, for the first time, Bowen Spray Drying installations have the widest possible application. The use of both nozzle and wheel atomization in the same installation allows the drying of widely varying products in a single plant at the maximum efficiency for each product.

This flexibility offers the smaller company with a number of products the advantage of low capital investment per product, plus the inherent superiority of the Spray Drying process.

The physical characteristics and output of any product can be positively and quickly determined by a simple run in our laboratory . . . the most comprehensive of its kind in the world.

We believe you will be interested in reading our new easy-to-understand booklet "The Bowen Story of Spray Drying." Send for your free copy

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Always Offer You More!
BOWEN ENGINEERING, INC.
NORTH BRANCH 1, NEW JERSEY

Recognized Leader in Spray Dryer Engineering Since 1926

When inquiring check CP 3117 on handy form, pgs. 2-3

Spare collars save cost on pressure vessel manhole flange

These glassed steel extensions over manhole covers are not to make them look chipper, but to prevent expensive pressure vessels themselves from becoming damaged. Placed over the manhole flange, collar takes the abuse that ordinarily goes to the manhole flange when cover is opened and closed constantly. When mechanical or chemical damages dictate that a collar must be reglassed, spare collar quickly replaces damaged one. Collar is then repaired or replaced at a small fraction of the cost previously required.

(Product of The Pfaudler Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. . . . check CP 3118 on form, pages 2 and 3.)

Increased storage life, lower costs offered by adhesive

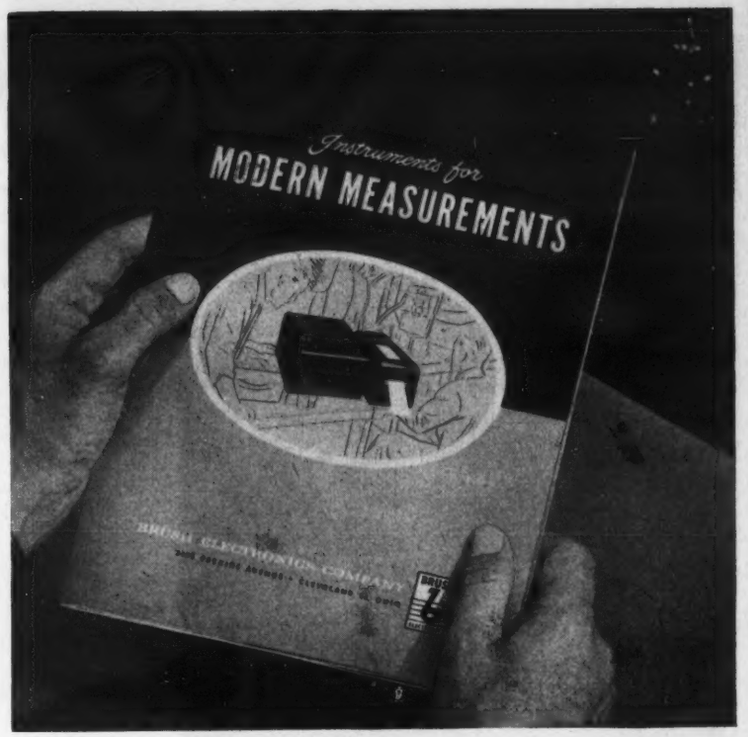
Manufacturer has announced an adhesive series specifically adaptable to exterior, fully waterproof bonding by room, intermediate temperature, or high frequency curing methods. Advantages cited over manufacturer's earlier series of this type are: increased storage life, longer pot life, faster cures, lower spreads, less hardener required, and lowered gluing costs.

(128-33 Series Adhesives are products of Snyder Chemical Corp., Dept. CP, Bethel, Conn. . . . or for more information check CP 3119 on handy form, pages 2 & 3.)

Use of non-acid flux eliminates cleaning before soldering

According to manufacturer, soldering can be done without surface cleaning by using this non-acid flux. It is said to operate through oil, grease, and oxides of metals. Flux has a strong capillary action that carries sufficient solder to any position, with even, smooth distribution — free of pin holes or barren areas — to make firm joints.

(Product of Lake Chemical Co., Dept. CP, 3052 W. Carroll Ave., Chicago 12, Ill. . . . or for more information check CP 3120 on handy form, pages 2 and 3.)



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Please send free copy of "Instruments for Modern Measurements".
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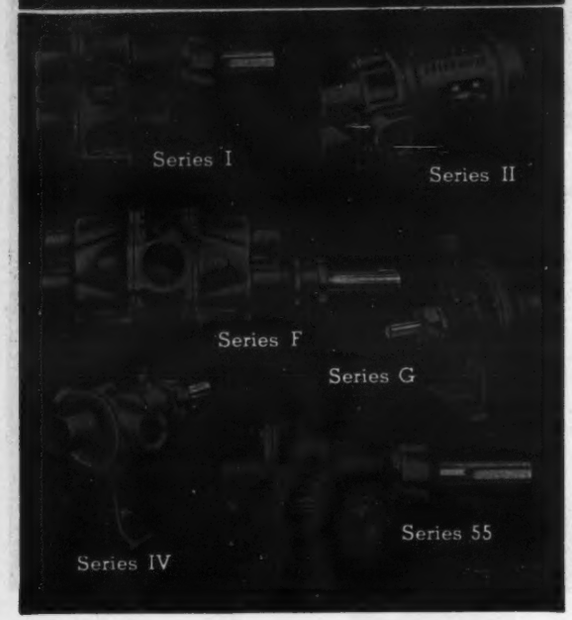
Company _____
Title _____
Address _____
City _____ *State* _____

When inquiring check CP 3121 on handy form, pgs. 2-3

Economical Bronze Design



Series I—Heavy duty bronze rotary gear pumps
Oilless bearings 2-23 G.P.M.—0-100 P.S.I. $14.25-$29.75 (six pumps)

Series II—Close coupled motor driven bronze pumps
Oilless bearings 2-4 G.P.M.—0-100 P.S.I. $20.00-$22.50 (two pumps)

Series F—High volume bronze rotary gear pumps
Oilless bearings 50-150 G.P.M.—0-150 P.S.I. $77.50-$200.00 (five pumps)

Series IV—Rubber impeller bronze pumps
Oilless bearings 6-21 G.P.M.—0-30 P.S.I. $16.00-$28.00 (three pumps)

Series 55—Standard bronze rotary gear pumps
Grease fittings 2-23 G.P.M.—0-100 P.S.I. $11.25-$29.00 (twelve pumps)

Series G—Standard bronze centrifugal pumps
Grease fittings 2-25 G.P.M.—2-10 P.S.I. $9.25-$24.00 (three pumps)

See our catalog in Sweet's PRODUCT DESIGN File

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
638 Thompson Rd., Syracuse, N. Y.
Address the 1953 edition of the Oberdorfer Industrial Pump catalog to:

NAME .....

COMPANY .....

ADDRESS .....

.....

Do you want a factory representative to call ☐ Yes ☐ No

When inquiring check CP 3122 on handy form, pgs. 2-3

Expanding Chemical Production

Open first plant for producing phenol from cumene

The world's first plant for manufacture of phenol from air and oil has been recently opened in Montreal East, Quebec, and will use a process developed in this country by Hercules Powder Company, Wilmington, Dela.

The new plant is owned and will be operated by B.A. Shawinigan Ltd., under license from Hercules and the Distillers Co. Ltd., of England.

At least six other large-scale plants using the same oxidation-cleavage process of terpenes, paracymene and cumene are under construction in this country and abroad.

Hercules Powder Company is now building an $8 million plant near Gibbstown, N. J. to utilize the same process for production of phenol and acetone.

Increase production capacity of polyvinyl acetate

Additional capacity for the production of polyvinyl acetate that can double the company's output of woodworking adhesives has recently been installed at the Plainfield, N. J. plant of National Adhesives, Div. National Starch Products Inc.

Break ground for alcohols unit, plan new chemicals

A new group of basic chemicals consisting of unsaturated higher alcohols, will be produced at a new chemical plant now under construction at Ashtabula, Ohio, by Archer-Daniels-Midland Company. Production of both saturated and unsaturated alcohols is expected within a year.

Vegetable, animal and marine fats and oils will serve as principal raw materials.

Nitrogen facilities will bring harvest to $20 million investment

A new nitrogen producing plant, built at a cost of $20 million, as part of Commercial Solvents Corp. Sterlington, La. plant, is expected to be in production for the 1953-54 fertilizer season. The new facilities will double the company's present output of nitrogen for agricultural and industrial utilization.

In addition to increasing present output of anhydrous ammonia, the new production units will add two basic sources of nitrogen to the company's agricultural chemical line — nitrogen solutions for mixed fertilizers and crystalline ammonium nitrate fertilizer used principally for direct application to the soil.

$8.5 million acrylonitrile facilities scheduled for Kentucky

Plans for a $8.5 million chemical plant at Calvert City, Ky., have been disclosed by the B. F. Goodrich Chemical Co. The plant will manufacture acrylonitrile, a liquid monomer used in making oil-resistant rubber, plastics, fibers, soil conditioners, and other chemical products.

Startup of the new plant, to be adjacent to the company's recently-opened $6 million vinyl chloride monomer plant in the same city, is scheduled for the fall of 1954, with an annual capacity of 24 million lb. Acetylene, a principal raw material for the new operation, will be fed by pipeline from the nearby plant of Air Reduction Company.

More HCl, MgO products in the offing as new plant goes on line

Full production began early this month at International Minerals & Chemical Corporation's new hydrochloric acid — magnesium oxide plant at Carlsbad, New Mexico.

The unit will produce large tonnages of hydrochloric acid and various high-purity magnesium oxide products from magnesium brine.

Begin construction of Michigan unit for caustic soda, chlorine

Construction of a $12 million plant at Montaque, Mich. for Hooker Electrochemical Co. is presently underway.

The plant, located on a 500-acre site, will convert brine into caustic soda, chlorine, and hydrogen when completed by the end of this year.

Institute will probe mysteries of agricultural chemicals

Establishment of the Mathieson-Squibb Institute of Chemical Research and Engineering on a 350-acre farm on the Falls Road near Shawan, Md. has been announced.

Plans include experimental work with the company's varied agricultural products such as plant foods,

insecticides and animal nutritional supplements. It is estimated that it will take about two years to complete appropriate changes. The Squibb Institute for Medical Research will remain in its present quarters at New Brunswick, N.J.

Styrene family gets new members for synthetics, resins use

A plant for the manufacture of vinyltoluene, a new raw material expected to broaden the horizon of styrene family of compounds, will be completed by the end of 1953 and in volume production in early 1954 at the Dow Chemical Company, Midland, Mich.

The new material will supplement styrene as a basic raw material for synthetic rubber and can be used as its replacement in paint vehicles, rubber-reinforcing resins, polyester resins, and molding powders.

Eastman Kodak gets green light for polyethylene production

Eastman Kodak Company has been licensed by Imperial Chemical Industries, Ltd., a British firm, to manufacture and sell polyethylene. Present plans call for a plant now being constructed at Longview, Texas, with an estimated capacity of 20,000,000 lb annually.

New sulfuric acid unit now on stream, ammonium sulfate next

First completed unit of American Cyanamid Company's Fortier Plant under construction in Jefferson Parish, La., is now producing sulfuric acid. Next to be completed will be the 100-ton-a-day ammonium sulfate facilities.

The plant, scheduled for completion early next year, will produce from natural gas such nitrogen chemicals as ammonia, acetylene, hydrocyanic acid, and derivatives of these, including acrylonitrile and ammonium sulfate.

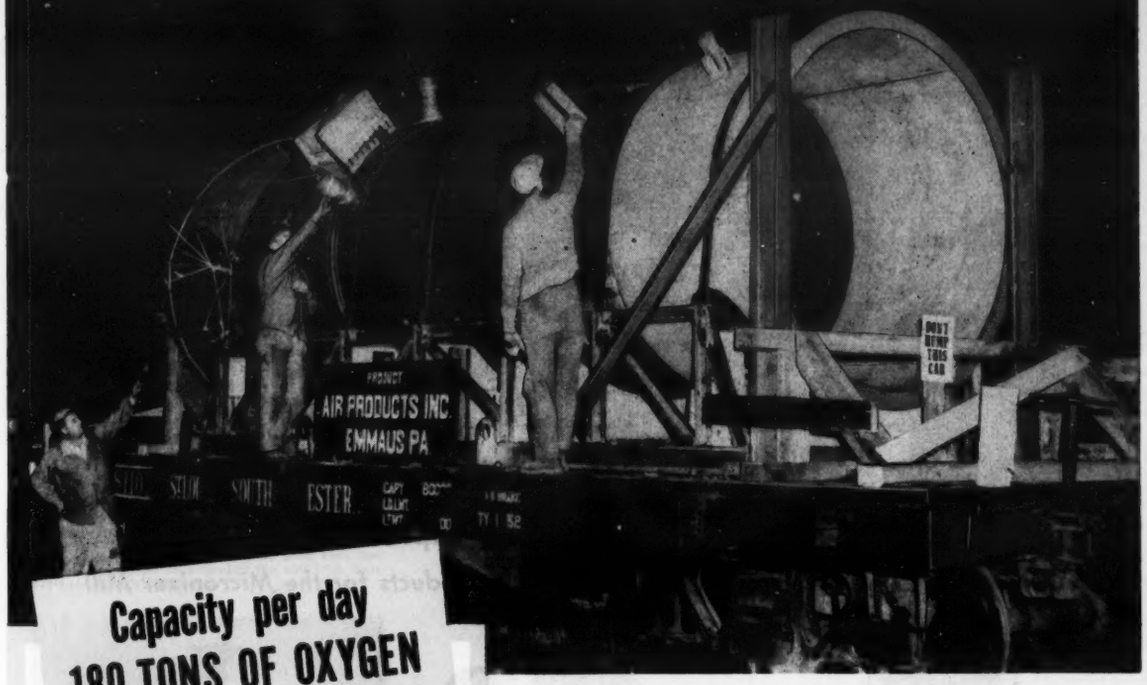
New unit for refining of soda ash is now on-line in Wyoming

Soda ash refining facilities of Food Machinery & Chemical Corp. at Westvaco, Wyo., have reached commerical production levels, it is reported. Both light and dense ash are available.

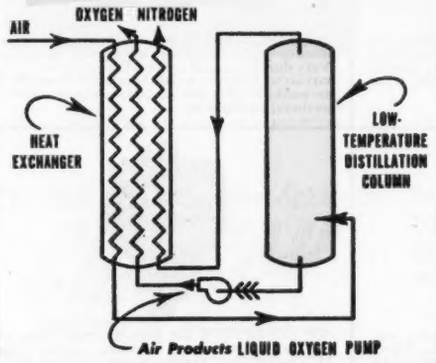
These facilities constitute the first wholly new soda ash manufacturing operations since 1935 by the first new producer to enter the industry since 1912, the company reports. FMC's Westvaco Chemical Division will operate the plant for the Intermountain Chemical Company and will also act as exclusive sales agent.

Giant Oxygen Distillation Column

...part of an *Air Products* Generator for SPENCER CHEMICAL'S new ammonia plant



Capacity per day
180 TONS OF OXYGEN
350 TONS OF NITROGEN



SIMPLIFIED DIAGRAM of the *Air Products* Generator for Spencer, which will separate oxygen and nitrogen from liquid air. *Air Products* columns of this type also used for low-temperature scrubbing of synthesis gas, hydrocarbon separation, etc.

ON ITS WAY to Spencer Chemical Co.'s new ammonia plant in Vicksburg, Miss. Spencer awarded *Air Products* the contract to design and manufacture a complete Oxygen-Nitrogen Generator.

When in operation, this generator will produce 180 tons of oxygen and approximately 350 tons of high-purity nitrogen per day. Spencer will use the oxygen to produce hydrogen (H), then combine this with the nitrogen (N) to produce ammonia (NH_3).

What are your requirements?

Air Products offers low temperature apparatus custom-made for all gas separation processes, plus a standard line of Oxygen-Nitrogen Generators. Write us your requirements.

Serving the STEEL, CHEMICAL, PETROLEUM and ELECTRONICS industries

Air Products INCORPORATED

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Allentown, Pa.

When inquiring check CP 3123 on handy form, pgs. 2-3

Announcing the STURTEVANT MICRONIZER*

Pulverizing Machine for Reducing Materials to Micron Sizes

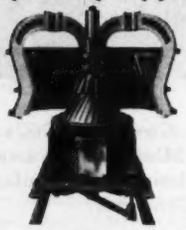
A fluid jet pulverizing machine, the Sturtevant *Micronizer* speeds reduction of materials to low micron sizes. These jet mills are especially applicable in fields where a particle size in microns is desired.

Sturtevant *Micronizer* mills are used throughout industry for reducing non-metallic and metallic minerals and ores, pigments, insecticides, fungicides, pharmaceuticals, plastics, dyes, and numerous other organic and inorganic products.

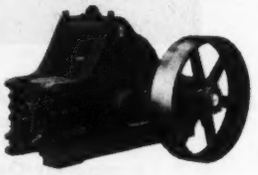
Sturtevant *Micronizer* pulverizers are available in many sizes and capacities. Write for information.

Other Sturtevant Pulverizing Equipment for Rapid Reduction of Materials...

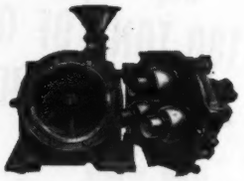
Especially Applicable for Initial Grinding of Products for the Micronizer Mill



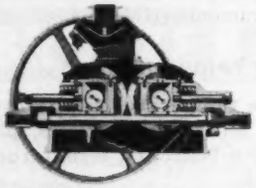
ROTARY FINE CRUSHERS for intermediate and fine reduction (down to ¼"). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers.



JAW CRUSHERS for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



RING-ROLL MILLS for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operated in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



CRUSHING ROLLS for granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8 x 5 to 38 x 20. The standard for abrasives.

SWING-SLEDGE MILLS for coarse and medium reduction (down to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.

AIR SEPARATOR for separation of fines to 325 mesh and finer. Increases output from 25% to 300%... lowers power costs by 50%. Capacities ¼ to 50 tons per hour output.

*Registered trademark of the Sturtevant Mill Company

STURTEVANT MILL COMPANY

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DESIGNERS & MANUFACTURERS OF DENS AND EXCAVATORS • MIXERS • SCREENS • PULVERIZERS • ELEVATORS • AND COMPLETE FERTILIZER UNITS

When inquiring check CP 3128 on handy form, pgs. 2-3

New

Outlines formulation and use of lacquer emulsions

Recent developments in emulsifying agents and in emulsifying and formulating techniques have led to increased uses for lacquer emulsions. These emulsions can be used either to apply coatings where non-penetrating films are desired for porous surfaces, or as low-viscosity impregnants for absorbant materials. In the latter case, they penetrate into such materials as paper and textiles and may be used as permanent sizes, printing compositions for fabrics, or as adhesives.

Two main sections of booklet dealing with formulation and use of lacquer emulsions are devoted to discussions of emulsion composition and emulsion preparation. Section on composition includes material on film-formers, resins and plasticizers, solvents and diluents, emulsifiers, coloration, emulsifying equipment, emulsifying technique, and emulsion stability.

Second section includes material on the preparation of lacquer emulsions based on nitrocellulose, ethyl cellulose, and Parlon (chlorinated rubber).

Form 500-185 is issued by Cellulose Products Dept., Hercules Powder Co., Dept. CP, Wilmington 99, Del. When inquiring specify CP 3129 on handy form, pages 2 and 3.

Synthetic soil conditioner helps to control erosion

Manufacturer reports that synthetic soil conditioner has been effectively demonstrated to help control rain and wind erosion on construction sites, levees, rights-of-way and similar applications. Product is designed to stabilize aggregates on the soil surface to hold seed and soil in place until vegetative cover crops germinate and become established. Material may be applied as a powder or as a water solution.

Information on application and preparation of solutions of product as well as description of application techniques and expected performance is given in bulletin.

Bul O-95 is issued by Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. When inquiring specify CP 3130 on handy form, pages 2 and 3.

Tell role of heat in carbon black reinforcement of rubber

Two reprinted papers summarize various aspects of the role of heat in the carbon black reinforcement of rubber. Earlier information in this field covered the carbon gel effect when dealing with GR-S polymer. Now this work has been extended to natural rubber.

Literature

The first of two papers deals with the carbon gel effect in reinforcement and covers such topics as basic properties of rubber carbons, effect of carbon properties on carbon gel, effect of polymer properties on carbon gel, effect of temperature on polymer and carbon gel and polymer gel repression and carbon gel.

Second paper summarizes various aspects of carbon black dispersion and heat in factory processing for optimum reinforcement. According to this report, hot processing of rubber-carbon mixes, when intelligently applied, is no longer to be dreaded but is one of the compounder's most effective tools for producing better quality whether the polymer be GR-S or the natural material.

Reprints of papers are contained in "Columbian Colloidal Carbons," Vol. XI, No. 5 and is available from Binney & Smith Co., Dept. CP, 41 E. 42nd St., New York 17, N.Y. When inquiring specify CP 3131 on handy form, pages 2 and 3.

Non-destructive testing prevents metal failure

Comprehensive paper on several methods of testing for failure of metal parts is included in engineering news bulletin. Illustrated article runs five full pages and describes conventional microscopic inspection, magnetic inspection, X-ray inspection, and radiography using isotopes. Excellent illustrations provided.

Bul SK-2 is issued by Schutte & Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. When inquiring specify CP 3132 on handy form, pages 2 and 3.

Corrosion-resistant clamps available in more than 40 different types

Fabricated of an alloy with a tensile strength of 47,000 psi, laboratory clamps are undistorted by pressures which bend or break similar devices. In addition, heavy nickel surface used on units is reported to be the most corrosion-resistant of all practical plating materials.

Complete line of clamps includes such items as buret holders, utility clamps, extension clamps and clamp holders. In addition, buret, duplex, thermometer, bath, suspension, stopcock, and support clamps are available of the same material. Complete mounting frames for various types of laboratory apparatus and related accessories for use with the assembled framework are contained in the complete line of units.

Cat FS-228, listing features and types of clamps and other accessories, is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 3133 on handy form, pages 2 and 3.

CHIKSAN Swivel Joints illustrated in this installation, facilitate the speedy, economical handling of various fluids through 16 lines from loading dock to manifolding pit — a distance of 800 feet. Since each line leads to a separate tank through the manifold, cross contamination is eliminated.

CHIKSAN Swivel Joints in the pump manifold above enable operator to pull base stock from outside storage into the plant and direct flow to proper vessel or proportioner.

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Write for Catalog 53-C, Dept. CP-8

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When inquiring check CP 3134 on handy form, pgs. 2-3

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Free Settling Rate of Particles

Nomograph Eliminates Trial-and-Error

By Y. S. TANG, Engineer

General Chemical Division, Allied Chemical & Dye Corp.

Edited by D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

NOMOGRAPHIC solutions are commonly used as "shortcuts" to calculations, and to predict information from limited experimental results. In this case, nomograph has an added advantage of eliminating trial-and-error solution to the problem.

Rate of settling of particles in a fluid is given by the equation:

$$v^2 = \frac{4gD_s}{3C_R}\left[\frac{\rho_s - \rho_L}{\rho_L}\right]$$

C_R in this equation represents the drag coefficient — or resistance against motion of the solid particle. Value of C_R depends on the Reynolds number (N_{RE}), which, for any shape of particle, is defined as $(D_s v \rho_L)\mu$. Equivalent diameter (D_s) refers to a sphere having a volume equal to the particle considered. Thus for spherical particles, $D_s = D_{av}$.

Since N_{RE} involves settling velocity (v), it is obvious that solution of the above equation involves a trial-and-error procedure. A method first suggested by Walas[1] for spherical particles has been used to construct this nomograph. Trial-and-error approach is greatly simplified.

In general, solid particles encountered in industrial operations often deviate from spheres. A nomograph, shown in Fig. 1, is therefore constructed to be applicable for any particle shape, using the concept of sphericity and the data reported by Brown[2]. For any particle with an average screen size, D_{av}, the sphericity, ψ, is defined as surface area of a sphere having same volume as the particle divided by surface area of the particle.

$$\psi = \frac{D_{av}}{D_s}\left(\frac{1}{n}\right)$$

where n = ratio of specific surfaces. Values of (D_s/D_{av}) and the sphericity, ψ, may be readily determined from the data in the literature[2] for various regular shapes.

TABLE I

SPHERICITY AND THE VALUE OF D_s RELATED TO SCREEN SIZE[2]

Shape	Sphericity, ψ	D_s/D_{av}
Sphere	1.00	1.00
Octahedron	0.847	0.965
Cube	0.806	1.24
Prisms*		
a x a x 2a	0.767	1.564
a x2a x 2a	0.761	0.985
a x2a x 3a	0.725	1.127
Cylinders †		
h = 3r	0.860	1.31
h = 10r	0.691	1.96
h = 20r	0.580	2.592
Discs		
h = r	0.827	0.909
h = r/3	0.594	0.630
h = r/10	0.323	0.422
h = r/15	0.254	0.368

* a = smallest side of the prism
† h = height; r = radius

Typical Example

Nomograph is used to determine value of Reynolds number. This can be used, in turn, to find v by means of —

$$v = \mu N_{RE}/D_s \rho_L$$

First step in solving settling rate problem is to determine C. This is a coefficient based on properties of the solid and fluid.

$$C = \sqrt{gD_s^3 \rho_L (\rho_s - \rho_L)/\mu^2}$$

Value of C, as computed, is found on center scale of nomograph. A straightedge is then pivoted on this point until the same value of N_{RE} is found on

Info on centralized lube system

Complete information and technical data on an install-it-yourself centralized lube system are contained in bulletin.

System is designed to service anywhere from 5 to 12 bearings on standard inclinable or straight side punch presses and other similar types of production machines. Manually-operated system simultaneously applies controlled amounts of oil or light grease to bearings while press is in operation. Optional flexible feed line and swivels are available for connection with motion-type bearings.

Among the specific advantages claimed by manufacturer for centralized lubrication are: higher efficiency, less bearing wear, reduced downtime for maintenance, and elimination of hazards encountered in hand lubrication methods.

Entire lube system is contained in a ready-to-install kit which, according to manufacturer, can be readied for operation by two maintenance mechanics in 1½ hr or less, without special tools or engineering skill.

Bul 805 is issued by Lincoln Engineering Co., Dept. CP, 5701 Natural Bridge Ave., St. Louis 20, Mo. When inquiring specify CP 3136 on handy form, pages 2 and 3.

Lists all types of rubber hose and belting

Specifications and brief recommendations for use of all types of hose and belting are given in 34-page catalog. In addition to these rubber products, others described include: couplings, nipples, fittings, sheet packing, gloves, mats, and stair treads.

Cat 278 is issued by Benj. B. Nusbaum & Co., Inc., Dept. CP, 1621 S. Michigan Ave., Chicago 16, Ill. When inquiring specify CP 3137 on handy form, pages 2 and 3.

For more information on product at right, specify CP 3138 . . . see information request blank between pages 2-3.

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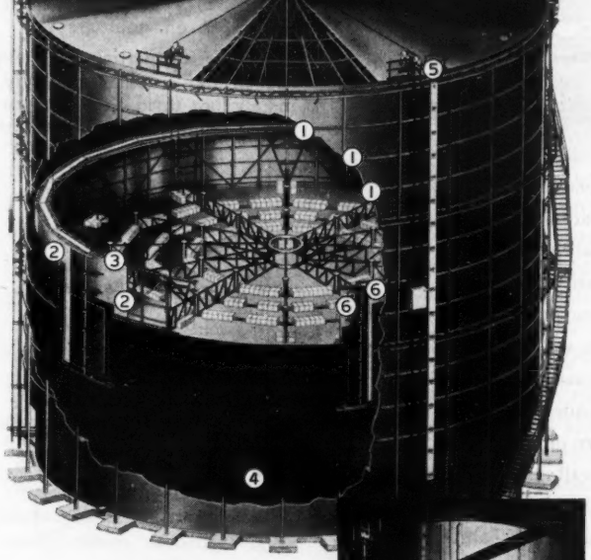

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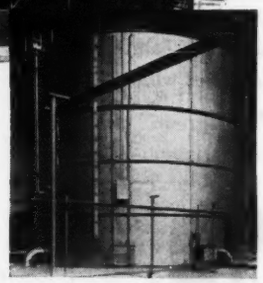

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When inquiring check CP 3139 on handy form, pgs. 2-3

Free Settling Rate of Particles

both left-hand scale and one of the right-hand scales. If particle is spherical, $\psi = 1.000$ scale is used and Reynolds number as found is correct. If particle has sphericity different from unity, projected point from proper ψ-scale is used for Reynolds number "balance."

Spherical particles: Suppose that a suspension of spherical particles has C = 12. Pivoting about this point on C-scale will produce a "balance" with a Reynolds number of 6. From this, and available data, settling velocity can be calculated. —from $v = \mu N_{RE}/D_s\rho_L$. (This problem is not illustrated on nomograph.)

Non-spherical particles: A suspension of particles shaped like discs with height equal to approximately one-third radius. Read value of D_s/D_{av} and ψ from table. (Where shape is not regular — a mutilated cube, for example — sphericity and value of D_s may be approximated by interpolating between regular crystal form and sphere.) Table shows that ψ is 0.600. C is now computed — assume for this problem that it is 96.

Pivot straightedge about 96 on C-scale noting both Reynolds number shown on left scale and the intercept on K-scale at right. When straightedge has been put in such a position that Reynolds number at left matches that projected from the proper ψ-scale ($\psi = 0.600$) to the intercept on the K-scale, that is the proper value of Reynolds number.

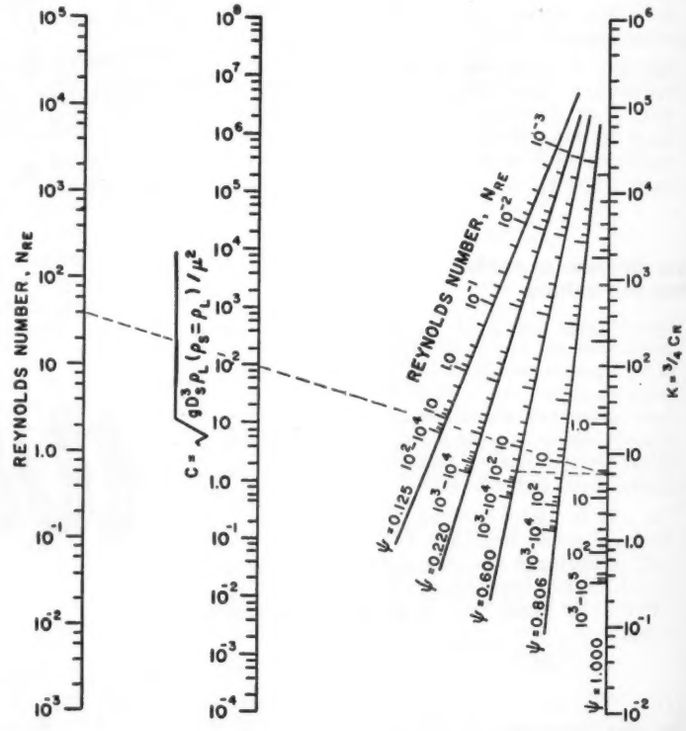
As shown on nomograph, N_{RE} in this case is about 40. Substitution in the equation, as above, will produce settling velocity.

Nomenclature (consistent units)

$$C = \sqrt{gD_s^3\rho_L(\rho_s - \rho_L)/\mu^2}$$

dimensionless

- C_R = Drag Coefficient, dimensionless
- D_{av} = Average Screen Size
- D_s = Diameter of sphere having same volume as particle
- g = Gravitational constant
- K = $(3C_R/4)$, dimensionless
- n = Ratio of specific surfaces
- N_{RE} = Reynolds number, dimensionless
- v = Free settling velocity
- ρ_L = Density of fluid
- ρ_s = Density of particle
- μ = Viscosity of fluid
- ψ = Sphericity, dimensionless



LITERATURE CITED

(1) WALAS, *Chemical Engineering*, Vol 58, No. 9, p 177 (1951)

(2) BROWN, et al, *"Unit Operations"*, 1st Ed, pp 76-77, John Wiley & Sons, Inc., N. Y. (1950)

52

Analysis of Benzene

By GEORGE E. MAPSTONE

Edited by D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

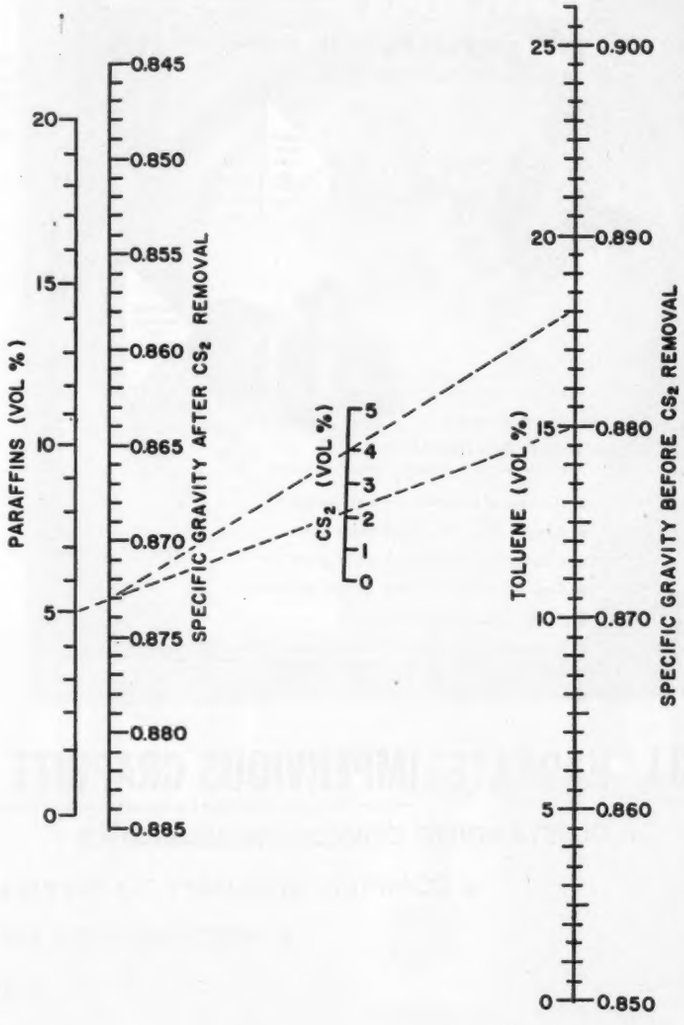
CARBON disulfide content of 90°-benzene can be estimated from change in specific gravity when it is washed with alcoholic alkali. A 100-ml sample is washed with 50 ml of paraffin-and-pyridine-free alcohol containing 5 g caustic soda and specific gravity of 15°C is checked after washing with water.

If toluene content of sample is known, paraffin content can also be found from specific gravity of the CS_2-free product at 15°C. This nomograph is used for interpreting results.

Typical Example

Specific gravity of a sample of benzene was reduced from 0.886 to 0.873 by washing with alcoholic caustic soda. What was the CS_2 content? Sample also contained 15% toluene. What was paraffin content?

Upper and lower index lines show that sample contained 4% CS_2 and 5% paraffins.



LITERATURE CITED:
1) *"Standard Methods for Testing Tar and Its Products,"* STPTC, London, 2nd Ed, 1938, Test No. 27-38, pp 197-8

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When inquiring check CP 3140 on handy form, pgs. 2-3

Leaflets present cellophane facts and functions

Evolution of cellophane and its characteristics and uses are presented in two leaflets. One bulletin (3070) rounds up facts about the almost 50 different types of cellophane now available. In rather breezy fashion, it describes the background of the transparent material and tells the "how" and "why" of its various adaptations in packaging.

The other bulletin (2198-1-53) is a "characteristics and uses" chart, recently revised, which lists all standard types and gages of company's cellophane, and briefly describes recommended uses for each. Types discussed are: non-moistureproof, non-heat sealing; intermediate-moistureproof; moistureproof; and moistureproof, colored. Specifications for each type of cellophane are also tabulated.

Bul 3070 and Bul 2198-1-53 are issued by Market Development Dept., Sylvania Div., American Viscose Co., Dept. CP, 1617 Pennsylvania Blvd., Philadelphia 3, Pa. When inquiring specify CP 3141 on handy form, pages 2 and 3.

Improved operations using circuit breakers

Application of circuit breakers to reduce downtime is discussed in booklet. Actual cases — with savings given — show how replacement of fused devices by circuit breakers result in improved continuity of operation.

Complete design and operating details are provided, and typical applications for each of seven different types of enclosures are given. A basic selection-data chart for general purpose NEMA 1A sheet steel enclosures is provided as well as a downtime cost comparison sheet for circuit protection.

Booklet B-5456 is available from Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring reader may simply specify CP 3142 on handy Reader Service slip between pages two and three.

ERRATUM

On page 200 of June CHEMICAL PROCESSING, in a Nomograph presentation on Pipe Wall Thickness, the following equation appeared:

$$t_m = \frac{PD}{S}$$

This should have read:

$$t_m = \frac{PD}{2S}$$

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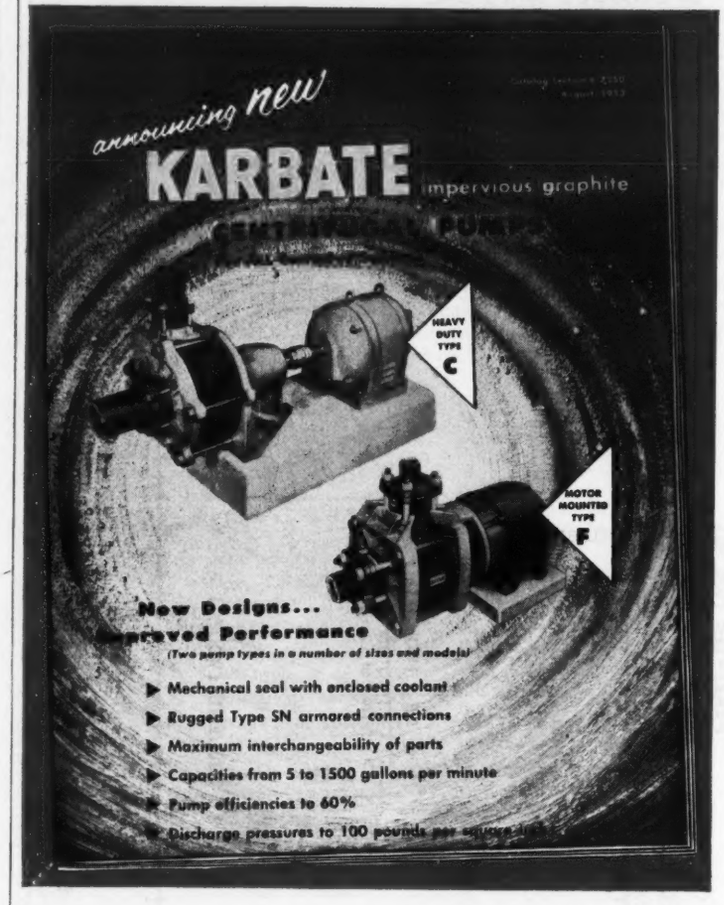
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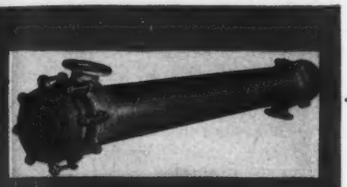

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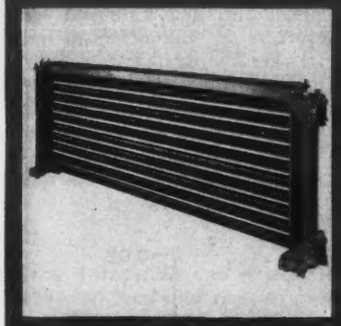

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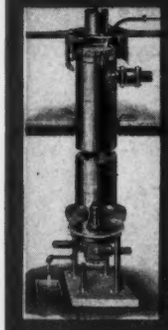

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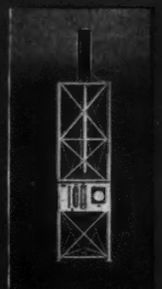

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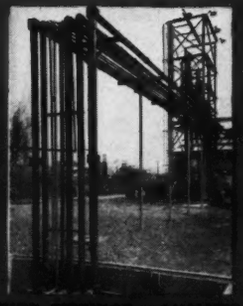

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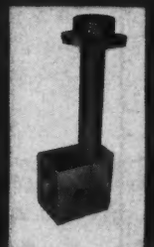

For heating and agitating corrosive solutions by direct injection of steam. Catalog Section S-7500.

When inquiring check CP 3143 on handy form, pgs. 2-3

Presents charts and tables on chloronaphthalenes

Characteristics of a representative group of refined, fractionated and crude chlorinated naphthalene products for industrial uses are described in 24-page booklet. Publication presents a number of charts and tables in which chlorine content, electrical and physical properties of representative chloronaphthalenes are compared.

Ranging from a low viscosity oil to a hard resin-like solid, the materials include intermediate waxlike solids varying in crystallinity, hardness and melting points. The chlorinated naphthalenes are classified as good dielectrics, have a high degree of chemical stability, sharp melting points at which they change to liquids of extremely low viscosity, inherent resistance to flames, and resistance to fungus growth.

Also provided are a table of test methods and two convenient questionnaires to facilitate obtaining information relative to specific applications. Booklet L-3 is issued by Dept. 153, Halowax Products Department, Bakelite Co., a Division of Union Carbide and Carbon Corp., Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 3144 on handy form, pages 2 and 3.

Deals with statistical methods for detergent laboratories

Forty-four page symposium reviews information contained in three papers dealing with statistical methods for detergent laboratories. Tests for significance, comparison of variability, use of analysis of variance in a practical situation, and importance of correlations when properly used are covered in the discussion. These topics are treated in connection with performance research testing in the field of detergents.

To obtain ASTM Special Technical Publication No. 139 remit $1.25 direct to American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pennsylvania.

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"Some of the Factors Influencing Yarn Tension in Warping" is issued by Statham Laboratories, Dept. CP, 12401 Olympic Blvd., Los Angeles 64, Calif. When inquiring specify CP 3145 on handy form, pages 2 and 3.

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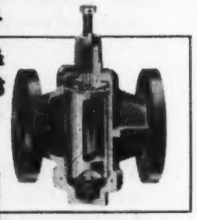

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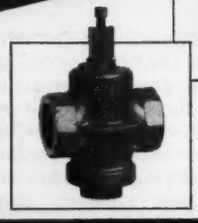

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P.O. BOX 140 CORAOPOLIS, PA.

When inquiring check CP 3148 on handy form, pgs. 2-3

Vapor Pressure of Hydrogen Bromide

By D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

VAPOR pressure of hydrogen bromide over its aqueous solution can be correlated with temperature by means of:

where:

$$\log p = \frac{A+B}{t/230}$$

p = vapor pressure of HBr, mm Hg
t = temperature, °C
A & B depend on concentration of solution

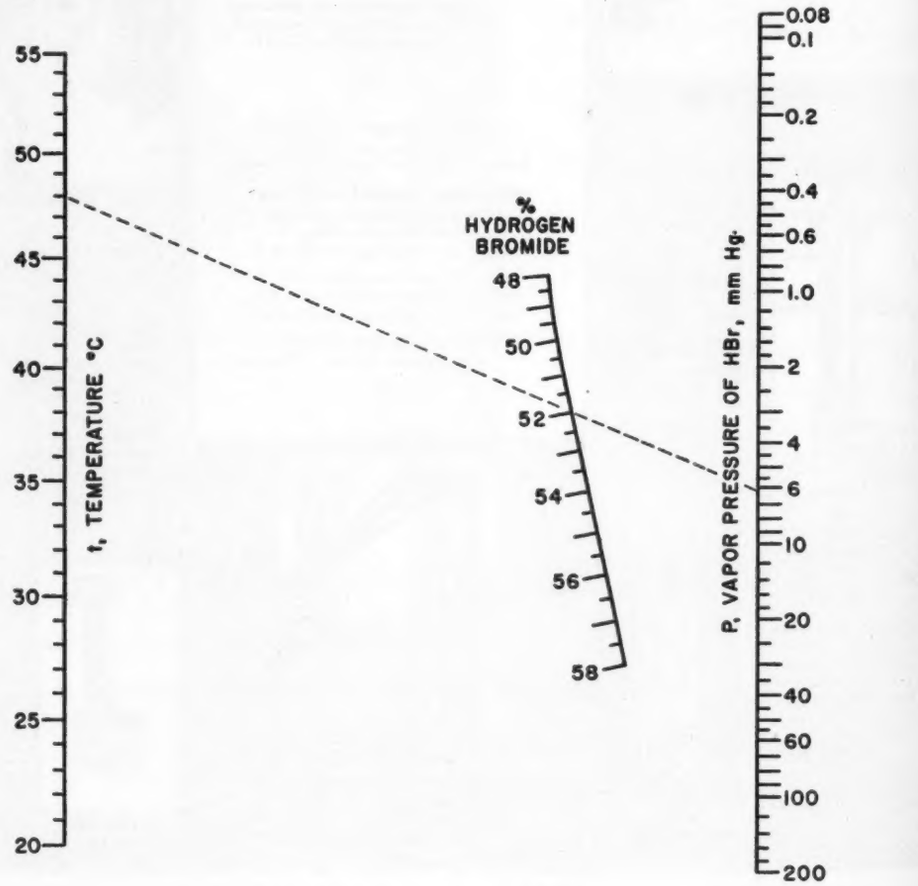
Equation is solved by means of accompanying line-coordinate chart constructed from available data[1].

Typical Example

What is the vapor pressure of hydrogen bromide over a 52% solution at 46°C. Connect 46 on t-scale with 52 on concentration scale and read desired vapor pressure as 6.2 millimeters of mercury on p-scale.

LITERATURE CITED:

1) PERRY, J. H., *"Chemical Engineers Handbook"* 3rd Ed. p 170, McGraw-Hill Book Company, New York, 1950



Eliminates costly ashing technique in analysis of Diesel lubes

Analysis for metallic contaminants in lubricating oils used in Diesel locomotives can now be conducted with speed and accuracy — without the time-consuming and costly ashing technique formerly used. Since the presence of certain contaminants found in used lube oils is indicative of wear on specific components in the engine, data may be gathered which correlates the amount and rapidity of wear with the concentration and change in concentration of the contaminants.

However, concentrations of the contaminants have been found to be comparatively low and methods of sample preparation have proved time-consuming and expensive. Ashing techniques have been most generally used which require large amounts of oil sample and a significant number of man-hours before suitable spectrographic sample and standards could be obtained. A recently-developed method eliminates this ashing technique.

Report describing the method and related equipment is issued by Applied Research Laboratories, 3717 Park Pl., Glendale 8, Calif. When inquiring specify CP 3149 on handy form, pages 2 and 3.

X-ray diffraction unit accommodates both standard and special cameras

Designed to complete manufacturer's line of diffraction apparatus, versatile instrument uses the same functional components as its companion units and provides a three-port vertical X-ray source for all film technics. Unit comprises four major components — housing, control, high-voltage transformer and water cooler. The unit is designed to accommodate up to three cameras at one time.

Features, components and specifications of unit are outlined in 20-page bulletin. Numerous photos show details of the instrument.

Bul 7A-3335A is issued by General Electric X-ray Corp., Dept. CP, 4855 Electric Ave., Milwaukee 14, Wis. When inquiring specify CP 3150 on handy form, pages 2 and 3.

Low temperature space insulation for walls, ceilings, floors

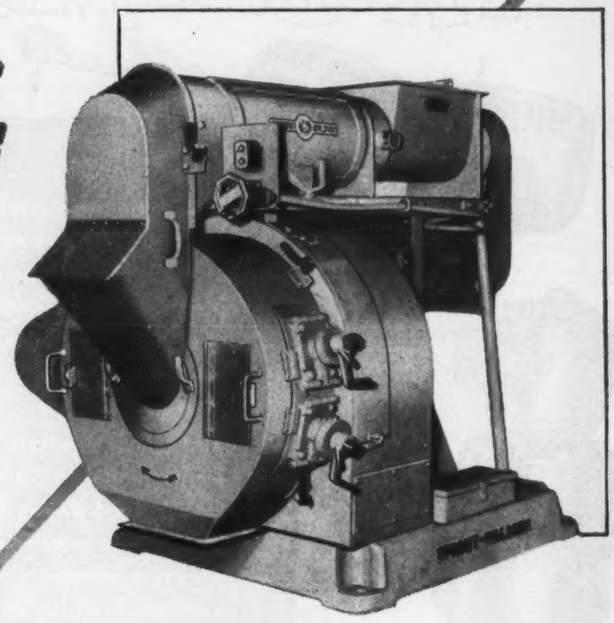
Information on a rigid cellular glass, low temperature space insulation for walls, ceilings, and floors is presented in 24-page booklet. Application methods for material on ceilings, walls, and floors is given. Finishes, suggested thicknesses, insulation values (in typical construction), and properties of material are listed. Text of booklet is easy to read and is well illustrated with pictures and drawings.

Form FL-100 is available from Pittsburgh Corning Corp., Dept. CP, One Gateway Center, Pittsburgh 22, Pa. When inquiring specify CP 3151 on handy form, pages 2 and 3.

Pellets Produce Profits

SPROUT-WALDRON'S

CONTINUOUS PELLETER



→ for processing
→ densifying
→ handling or
→ up-grading
many materials

By forming a hard "shell" around materials, and vastly reducing the surface area, pelleting benefits many materials. It helps to retain the original analysis of the materials, reduces dusting, facilitates handling, shipping and storage, and enhances the eye-appeal of the product. Here are only a few of the materials that are being pelleted: ammonium chloride, insecticide dusts, clay, citrus meal for use as a carrying agent for antibiotics, fertilizer and granular hygroscopic products.

With this new continuous S/W pelleter, the process can now be accomplished in tremendous volumes, and at reasonable investment and operating costs. For example, pellets 3/16" in diameter and 1/4" long can be produced with some materials at capacities of ten tons or more per hour, with only 75 h.p. The same machine produces smaller or larger pellets—even 1" cubes—in many shapes.

Perhaps you have some material that can be pelleted, at increased profit for you. Sprout-Waldron has vast experience in *adaptioneering* pelleters for many uses in the processing and other fields. Get full details! Write to Sprout-Waldron & Co., Inc., 10 Logan Street, Muncy, Pennsylvania.

S W

SPROUT-WALDRON

Manufacturing Engineers

MUNCY • PENNSYLVANIA

316-A

MODERN EQUIPMENT FOR: Size Reduction • Mixing and Blending • Bulk Materials Handling • Product Classification • Pelleting & Cubing

When inquiring check CP 3152 on handy form, pgs. 2-3

SOLVE YOUR MIXING PROBLEMS

A tremendous variety of fluid mixing needs are ably handled by the complete line of Eastern Mixers. Size and power of mixers are flexible to help solve your problems. For complete information and engineering data, write for Eastern Fluid Mixing Catalogs. Eastern engineers are always available to work out your complex mixing problems with you.

EASTERN INDUSTRIES ★ MIXER DIVISION ★

Eastern INDUSTRIES, INC.
Dept. D, Regent St., Norwalk, Conn.

When inquiring check CP 3153 on handy form, pgs. 2-3

NEW LITERATURE

Scale drawings of 30 gearmotors offered

Scale drawings of company's gear-motor line are available to layout draftsmen, designers, engineers, and architects. Presented in simplified style, but to exact scale, these drawings are designed to be inserted under a layout of a machine or other equipment, and traced in the proper size and position.

In order to provide maximum usefulness of these drawings, company has included all the following scales for each motor: $\frac{3}{8}'' = 1'$ (1/32 size); $\frac{1}{2}'' = 1'$ (1/24 size); $\frac{3}{4}'' = 1'$ (1/16 size); $1'' = 1'$ (1/12 size); $1\frac{1}{2}'' = 1'$ ($\frac{1}{8}$ size); and $3'' = 1'$ ($\frac{1}{4}$ size). Drawings are on punched $8\frac{1}{2}$ x 11" paper for easy insertion into any standard 3-ring binder.

Three views are included of each of the 30 various motors shown. Single and double reduction gearmotors, as well as the worm type, have been scaled for tracing. To aid in selecting the proper motor for the job, a booklet including specifications, dimensions, and like data accompanies drawings.

Scale drawings of Syncrogear line of motors are available from U.S. Electrical Motors, Inc., Dept. CP, Terminal Annex (Box 2058), Los Angeles 54, Calif. When inquiring specify CP 3154 on handy form, pages 2 and 3.

Pipe line air filter cleaning is easy

Four-page, 2-color bulletin discusses low pressure air pipe line filters with one bolt construction permitting media cleaning without breaking any pipe line connections during process.

Four models are described and specifications and performance data are presented on filters recommended for removal of dust, dirt, pipe scale, condensed oil and water vapor from compressed air lines.

Specified for installations requiring only 40 psi maximum pressures for compressed air or gas, filters are available in two types. "CH" models feature radial fin

Shoveloader-more efficient
BULK HANDLING
for only $2332
Prices for 3/8 yard Shoveloader start at $2332 (f.o.b. factory) for complete unit including tractor.

This versatile *low-cost* handling and maintenance tool does so many things so efficiently that practically every industrial plant will find it a profitable investment.

- It will handle bulk material.
- It will stockpile, charge hoppers, and load trucks.
- It will do grading, landscaping, backfilling or yard clean-up work.
- It will carry coal to power station and haul away ashes.
- It can handle heavy loads of loose castings or other parts.
- It will remove snow from storage yard, parking lot, driveways and sidewalks.

The Lull Shoveloader will out-perform similar units that cost much more. Features include greater forward reach, higher lift, power down-crowd, full hydraulic control of bucket, sturdy bridge type construction. Bulldozers, cranes, snow-buckets, forks or sweeper attachments are easily added.

write for Bulletin AD-32-B or contact your Lull distributor for complete information.

THE BAKER-LULL CORPORATION
Formerly the Lull Manufacturing Company
315 WEST 90th STREET • MINNEAPOLIS 20, MINN.
A subsidiary of the Baker-Raulang Co. • Cleveland 2, Ohio

Baker Lull
handling equipment

When inquiring check CP 3155 on handy form, pgs. 2-3

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Specialist in *all* Non-Corrosive Fastenings!

Call Harper *first!* America's largest producer of non-ferrous and stainless steel fastenings—specializing in bolts, screws, nuts, rivets, washers and accessories in brass, bronze, copper, aluminum, Monel, stainless steel—to solve your problems in corrosion, heat, abrasion and stress. Over 7,000 items stocked by warehouses and distributors from coast to coast.

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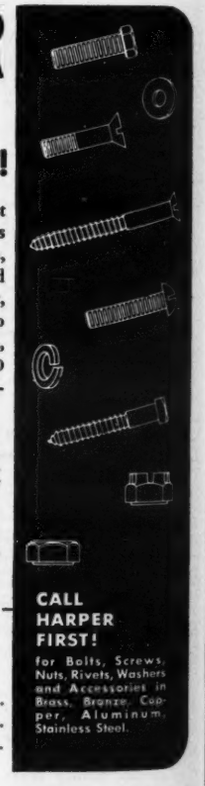


CALL HARPER FIRST!
for Bolts, Screws, Nuts, Rivets, Washers and Accessories in Brass, Bronze, Copper, Aluminum, Stainless Steel.

When inquiring check CP 3156 on handy form, pgs. 2-3

insert, and "AA" models have absorption pads. Both types perform two separate cleaning operations on air or gas: mechanical separation and filtration. Bulletin also briefly covers other filters made by company for different applications.

Bul 210 is issued by Dollinger Corp., Dept. CP, 11 Centre Pk., Rochester 3, N. Y. When inquiring specify CP 3157 on handy form, pages 2 and 3.

Saves fuel two ways

A fuel oil additive which is said to save on fuel costs by removing soot from stacks and dissolving sludge in tanks is discussed in 4-page bulletin.

Treatment is safe to use and cleans burning system completely from storage tank to top of stack, according to manufacturer. Product also reduces pour point of fuel oil, which makes it free-flowing even at reduced temperatures. Bulletin includes directions on methods of application for additive.

Bul on Sterlene is issued by The Sterling Water Treatment Co., Dept. CP, 1920 W. 77th St., Cleveland 2, Ohio. When inquiring specify CP 3158 on handy form, pages 2 and 3.

Reviews methods for waste treatment

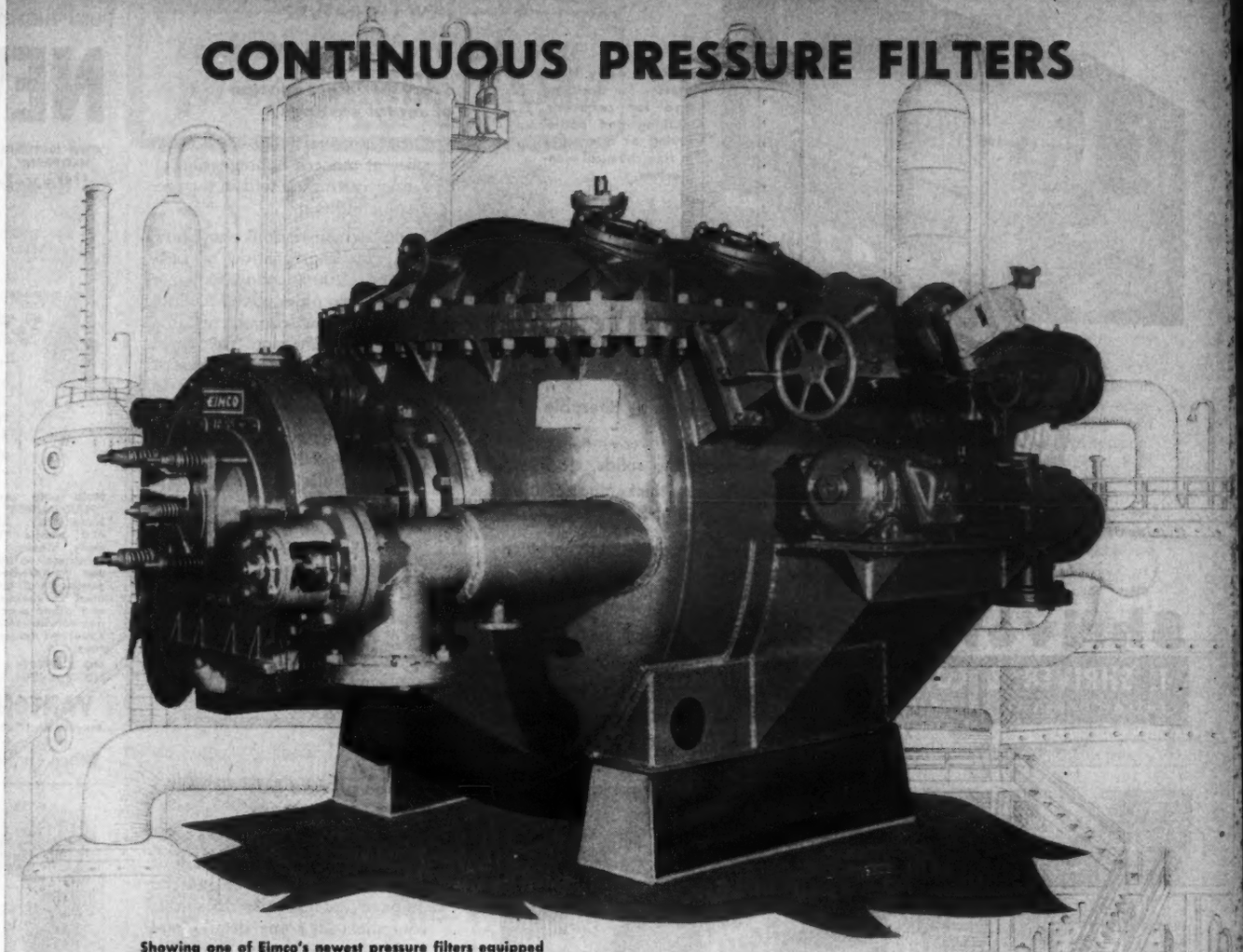
Detailed explanation of waste treatment methods is contained in bulletin. Enclosed with this material is a 2-page data sheet on waste treatment.

Types of waste discussed include coke, canning, antibiotic, and petroleum refinery. Bulletin also covers the general problem of waste disposal as it affects various industries.

Bul File SM-9340 with Keep Sheet No. 20, is issued by % Proportioneers, Inc.%, Dept. CP, 345 Harris Ave., P. O. Box 1442, Providence 1, R. I. When inquiring specify CP 3159, pages 2 and 3.

For more information on product at right, specify CP 3160 . . . see information request blank between pages 2-3.

CONTINUOUS PRESSURE FILTERS



Showing one of Eimco's newest pressure filters equipped for dewatering and washing with automatic precision scraper blade advancing mechanisms.

Every Eimco Filter for vacuum or pressure operation, or combination of the two, is a custom built machine designed and constructed to meet the specific requirements of your process.

The machine pictured above is another typical example of Eimco custom built filter design. This filter is part of the flow sheet in a plant producing phenol, acetone and alphamethyl styrene. The purpose of the filter is to remove sodium sulphate crystals and small amounts of water and it was also necessary that the phenol in precoat cake be reduced to .05% washing with crude acetone and separating the strong and weak filtrates.

Eimco's testing and development departments are staffed with experienced chemical and metallurgical engineers whose work with consulting engineering firms and the engineering departments of many producing companies has resulted in economies in operation and production of their product.

May we have an opportunity to consult with you and quote on your filter requirements?

EIMCO A458

THE EIMCO CORPORATION

The World's Leading Manufacturer of Vacuum Filtration Equipment

EXECUTIVE OFFICES AND FACTORIES: SALT LAKE CITY 10, UTAH, U. S. A.

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One of many filter presses for clarifying and for recovery, washing and partial drying of filter cake in fine chemical manufacture.

More VERSATILE • EFFICIENT WIDELY APPLICABLE

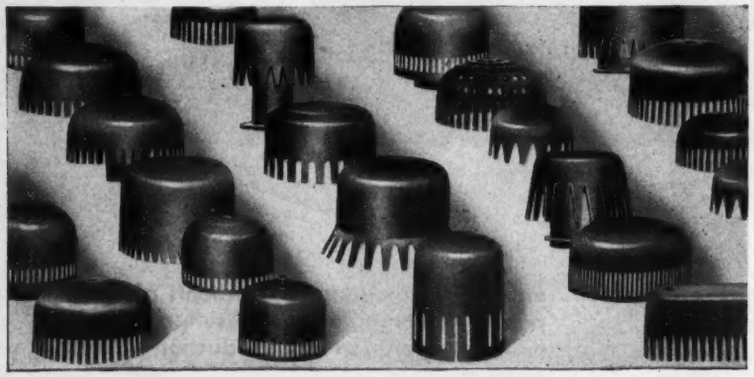
- Economical in first cost and in operation.
- Applicable for almost any filterable material.
- Capable of recovering solids, clarifying, washing, extracting, thickening, melting, redissolving—any or all in one equipment.
- Operate at any pressure or temperature, in any capacity.

Get Catalog 52.

Shriver Filter Presses

T. SHRIVER & CO., Inc. 846 Hamilton St. · Harrison, N. J.
Filter Presses · Filter Media · Diaphragm Pumps

When inquiring check CP 3161 on handy form, pgs. 2-3



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BUBBLE CAP BULLETIN 21

Largest Compilation of Engineering Data.

Lists 200 Styles Furnished Without Die Cost.

This standard reference contains complete specification information for over 200 standard styles of bubble caps and risers. Also drawings for use in determining methods of tray assembly. All styles listed in Bulletin 21 are furnished promptly, without die cost, and in any alloy to meet your coking or corrosion problems. Special caps gladly designed; write us to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.

PSC

Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 3162 on handy form, pgs. 2-3

NEW LITERATURE

Story of impregnation of metal castings

Developmental and application story of modern impregnation of porous castings is told in 8-page, 2-color bulletin.

Complete illustrations show how and why impregnation of castings by a 100% solid copolymer differs from older methods. Photographs show equipment used in batch immersion for rapid treatment of large quantities of parts, as well as applications in various metals.

Special sections explain how impregnation reduces product rejects in both cast and metal powder parts. Tables are also provided giving properties of company's impregant, and the corrosives it will resist.

Bul MMC-048 on Metaseal is issued by American Metaseal Mfg. Co., Dept. CP, 30 E. 60th St., New York 22, N. Y. When inquiring specify CP 3163 on handy form, pages 2 and 3.

Catalogs oil and gas burners, equipment

Designed as foundryman's easy-to-use guide in selecting oil or gas burners, torches or heaters, 28-page catalog describes this equipment in some detail. Said to be fast in heating and easy to use, equipment helps improve operations on ladle heating, mold drying, cupola lighting, preheating electric furnace linings, core baking, firing melting and annealing furnaces, thawing and drying coal and sand, preheating for welding, and other plant services.

Practically every size of manufacturer's equipment, normally furnished to burn oil, now has a corresponding model, in a gas burner. Gas equipment includes models for use with manufactured, mixed, natural, propane, or butane gas — burned in conjunction with compressed air. Other types burn LP gas, commonly known as bottled gas, without compressed air.

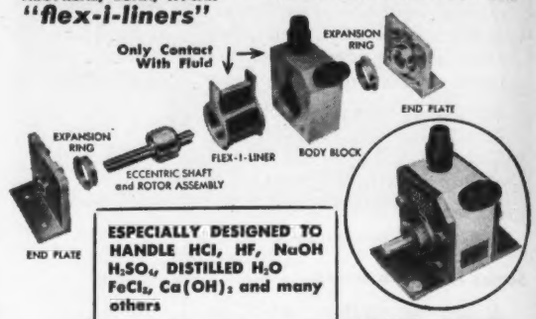
Cat 1043C is issued by Hauck Mfg. Co., Dept. CP, 124-136 10th St., Brooklyn 15, N. Y. When inquiring specify CP 3164 on form, pages 2 and 3.

PUMP HIGHLY CORROSIVE FLUIDS & ABRASIVE SLURRIES

NEW POLYETHYLENE PUMPS

WITH NATURAL RUBBER, GUM, NEOPRENE, BUNA, HYCAR "flex-i-liners"

"NO STUFFING BOXES"



ESPECIALLY DESIGNED TO HANDLE HCl, HF, NaOH H_2SO_4, DISTILLED H_2O $FeCl_3$, $Ca(OH)_2$ and many others

"FLUID NEVER TOUCHES METAL"

Fluid only contacts outer surface of "FLEX-I-LINER" and inner surface of body block. 35 combinations of rubber and plastic "flex-i-liners" and pump body blocks. Models available from fractional to 20 G.P.M., Vinyl and Compar "flex-i-liners" also available in pumps to 5 G.P.M. capacities. Widely used in chemical, food, pharmaceutical and other process industries—wherever non-contaminating pumping is required. Excellent for slurries. Write for literature.

NO GASKETS
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NON CORROSIVE CONTAMINATING
flex-i-liner
PUMPS

When inquiring check CP 3165 on handy form, pgs. 2-3

FREE GUIDE
to proper
SPRAY NOZZLE selection
BINKS
Whatever the application ... chemical spraying, evaporative cooling, web spraying, washing, cleaning ... you will find this new 40-page catalog of nozzle information helpful. Data includes nozzle dimensions, capacities, illustrations ... in short, everything you need. And it's FREE! Just contact: Binks Manufacturing Company, 3120-32 Carroll Ave., Chicago 12, Ill.
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Binks
A COMPLETE LINE OF INDUSTRIAL SPRAY NOZZLES AND COOLING TOWERS

When inquiring check CP 3166 on handy form, pgs. 2-3

Development case histories of well-known products

Aerosols, toxaphene, Krilium, Orlon, Vicara, and Coca-Cola are some of the 16 consumer products whose chain of development is outlined and detailed in 134-page book. In addition, 21 case studies of various industrial chemical products are presented including: Emery Dimer Acid, Carbide and Carbon's Glyoxal, Shell Chemical Corp. and synthetic glycerine, Edwal Laboratories and phloroglucinol, Monsanto Chemical Co. and plasticizers, Koppers Co. and Polystyrene P-8, and Phillips Petroleum and petrochemicals.

To obtain "Case Studies in Commercial Chemical Development" remit $5 direct to Chemonomics, Inc., Dept. CP, 400 Madison Ave., New York 17, N. Y. When inquiring specify CP 3167 on handy form, pages 2 and 3.

Unemployed ideas — and how to put them to work

Excellent little 16-page booklet explains the nonprofit Battelle Development Corporation. An outgrowth of the Battelle Memorial Institute which started in 1929, the Development Corporation is interested in translating research into commercially profitable ideas. Booklet explains how ideas may start either with research at the Institute or may be submitted by corporations or individuals.

Under the broad headings of "what it is, how it serves, what it has done, patents it holds, and freelance inventors," this booklet supplies all the information needed.

"Putting Ideas to Work" is issued by The Battelle Development Corp., Dept. CP, 505 King Avenue, Columbus 1, Ohio. When inquiring specify 3168 on handy form, pages 2 and 3.

Flotation — a useful method for a variety of separations

Although finding its primary application in the past in the mining industry, flotation is being recognized by other industries as a versatile process useful as a means of making separations on a large scale. Using this reported condition as a springboard, factual booklet outlines the process and the purpose that several flotation agents serve.

Highlighted in the description section dealing with flotation agents is the use of RADA (Rosin Amine D acetate). This material functions as a collector for silica and silicate minerals.

Information on manufacturer's flotation agents and development activities in the flotation agent field is included. Group of mathematical formulas used in the operation and control of modern ore dressing mills are given in a separate section.

Form 400-467 is issued by Naval Stores Dept., Hercules Powder Co., Dept. CP, Wilmington 99, Del. When inquiring specify CP 3169, pgs. 2 & 3.

Look at the SERVICE you get with AMESTEAM GENERATOR!

1 BEFORE INSTALLING, a complete "How-to-do-it" manual.

2 AFTER INSTALLING, our LOCAL service man starts your unit and provides three months' free service.

— PLUS —

— a compact, self-contained unit fully piped and wired for low-cost installation, fully automatic and guaranteed 80% efficient.

FREE BULLETIN! Write now for AMES bulletins describing 20 sizes, 10 to 600 h.p., 15 to 200# gas or oil. WRITE TODAY.

AMES IRON WORKS INC.

BOX B-83, OSWEGO, N.Y.

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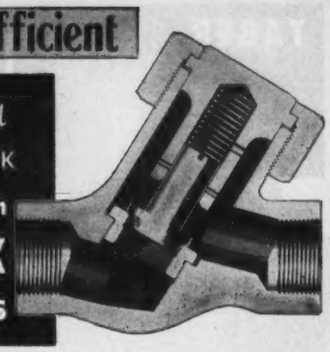
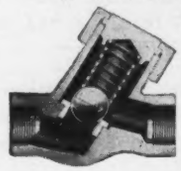
Quiet... Efficient

Edward NON-SHOCK Ball & Piston CHECK VALVES



Vibration, clatter, and damaging shock to piping are cut to a minimum with Edward forged steel ball and piston check valves. Cushioned closing action eliminates excessive vibration. Accurate guiding and spring loaded construction assure fast positive seating.



EValloy stainless steel seat and ball or piston give maximum trouble-free service.

Union or bolted bonnet in sizes ¼ in. to 2 in. inclusive in two pressure classes —600 lb at 850 F and 1500 lb at 850 F. For complete information, write for Catalog 104.

Another Edward Product

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY

1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 3171 on handy form, pgs. 2-3

"There Are No Dye Specks in Our Molding Powders"

This is the comment of a large producer of molding powders, in answer to our question as to the performance of their

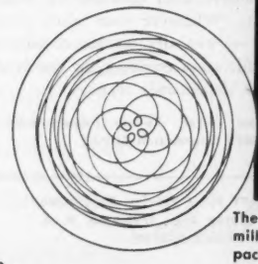
ABBÉ DISPERSALL MIXERS

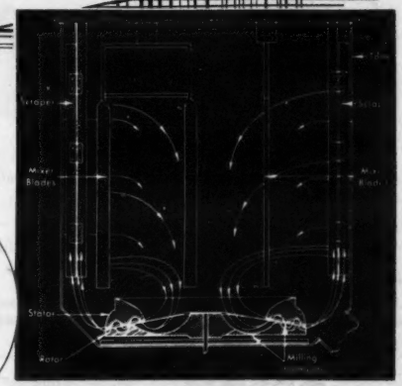
They use a number of dyes that are insoluble in alcohol in making up molding powders. With their ABBE Dispersall Mixers, these dyes are so thoroughly broken up and dispersed by the unique milling elements of the machine, that they no longer have any trouble with color specks.

If you want thorough break up and dispersal of liquid globules as well as solid agglomerations in any of your mixes, plus much faster mixing in ONE operation . . .

Investigate!

Write for Bulletin 68 which tells the complete DISPERSALL MIXER story.





The mix is pulled down through the rapidly rotating milling element with the cupped rotor-stator. Here impact and shear break up agglomerations of solids and liquid globules to speed up the dispersion of the mix. Left—The mixing pattern of Dispersall mixing blades.

ABBÉ ENGINEERING CO. • 46 CHURCH STREET, NEW YORK 7, N. Y.

Makers of ABBE ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 3172 on handy form, pgs. 2-3

TABER

DRAINAGE WATER *Protection....*

FIG. 19,481

Costly damage, often caused by seepage water, floor drainage or unexpected water . . . can be best avoided by the installation of a dependable, rugged automatic vertical Taber Sump Pump like Fig. 19,481.

When an emergency arises, the thoroughness of Taber engineering and the ruggedness of Taber construction . . combine to deliver the protection sought and paid for.

BULLETIN S-852 containing eight pages of construction and engineering details, along with rating tables, on request.

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K-771

VERTICAL **TABER SUMP PUMPS**

When inquiring check CP 3173 on handy form, pgs. 2-3

for your FILTER FABRIC problem

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Specialists in fabrics for industrial filtration

It takes a specialist to prescribe the most effective, least expensive filter medium for your specific requirement. Whatever your fabric problems are in filtration — wet, dry or dust-collection, consult a Flaherty filtration engineer for the *best* answer and *immediate dependable service.*

Cut filtering costs! Reduce "down-time" for changes! Send for FREE information TODAY

A complete line of industry-accepted filter fabrics in all weaves, weights and widths.

DYNEL
VINYON N
NYLON
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SARAN
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Available in yards or rolls, or custom-fabricated

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Name .....
Firm .....
Product Filtered .....
Address .....
City ..... State .....

When inquiring check CP 3174 on handy form, pgs. 2-3

NEW LITERATURE

Data on slings listed in brochure

Informative, handy, compact, 4-page reference folder on slings explains 3 body styles and presents pictures and drawings of various types.

Industrial slings discussed have approximate breaking strengths of 1000 lb to 243.4 tons. They are listed with safe loads shown in tons for various angles of use.

All are available in many styles, custom made in any length or capacity required.

Folder 5308 is issued by Advertising Dept., Macwhyte Co., Dept. CP, 2936 14th Ave., Kenosha, Wis. When inquiring specify CP 3175 on handy form, pages 2 and 3.

Storage of things from A to Z reported

Concrete storage systems, individually designed to handle materials from A to Z — aggregate to zinc oxide — are discussed in 12-page catalog.

Illustrations and text cover general description of concrete silos and bins, plus detailed drawings and specifications of foundations, roofs, walls, and floors. An industrial silo capacity chart is included along with information on construction.

A.I.A. File No. 35-L-1 is issued by The Marietta Concrete Corp., Dept. CP, Marietta, Ohio. When inquiring specify CP 3176 on handy form, pages 2 and 3.

Describes instruments for radiochemistry

Complete counting systems, proportional counter converters, scaling units, conversion chambers for filter-paper counting, air monitors and various accessory units for use in radiochemical operations are outlined in comprehensive catalog.

"Catalog of Instruments and Accessories" is issued by Nuclear Measurements Corp., Dept. CP, 2460 N. Arlington Ave., Indianapolis 18, Ind. When inquiring specify CP 3177 on handy Reader Service slip, pages two and three.

"K" Fittings in Another Great Building

It is common practice for "K" Fittings to be used in buildings of all types and sizes. So we are not citing their use in the Government Accounting Office Building as something unusual, but the structure itself is interesting.

The outside dimensions are 328 x 578 ft. The building is seven stories high, with basement and subbasement. It houses 9,000 people. Feeding service accommodates 2,000 at one seating. An auditorium seats 250. There are garage facilities for 800 cars.

Pipe fitters like to work with "K" Fittings. The threads are tapped full and clean. Openings are chamfered so pipe enters easily. Precise angularity of machining assures symmetrical runs. Uniform walls and high tensile strength give "K" Fittings the stamina to withstand the most severe make-up strain.

It pays to order fittings from distributors who handle the "K" line.

Good workmanship sells "K" Fittings

K PIPE FITTINGS
CAST IRON AND MALLEABLE
3,000 Shapes and Sizes

Complete information gladly furnished.

THE KUHNS BROTHERS COMPANY
Dayton 1, Ohio
Established 1887
Combined marketing facilities with Malleable Iron Fittings Company, Branford, Conn.

When inquiring check CP 3178 on handy form, pgs. 2-3

Engineered Maintenance

(*Continued from page 5*)

The effect of this transition was to precipitate a Works Engineering organization which could establish, in terms of authority and responsibility, the administrative structure and relationship to attain its objectives. Works Engineer is the term generally used to designate the head of the organization, although several different titles such as, Engineering Superintendent, Plant Engineer, Mechanical Superintendent, are used to identify his job. Under him are supervisory engineers who must be able to administer and coordinate:

1. production and distribution of utilities
2. field and shop maintenance work
3. preventative and corrective measures for reducing maintenance cost and improving operating equipment
4. to plan and schedule effective methods for the execution of maintenance and construction work.

Naturally, these supervisory engineers must have the appropriate technical education to understand and the initiative to execute preventative and corrective maintenance methods in the plant. Moreover, they must be able to work harmoniously with management and with the lower levels of supervision.

In conclusion, I would re-emphasize the production savings which can be achieved by utilizing engineers in a strong maintenance organization and by defining their responsibilities. With their assistance to think in terms of prevention and correction, we will not have to worry too much about "Repairs."

Includes application data on immersion heaters

Four-page electric immersion heater catalog features a section of application data for calculating power requirements for heating processing tanks. Data simplifies problem of estimating heat losses, determining correct kilowatts needed, and selecting proper heater size for tank capacity.

Fully described in catalog are two types of electric immersion heaters of manufacturer's line. Heavy-duty, steel-sheathed unit for heating non-corrosive liquids and mixtures has a nickel alloy resistance element covered by a quartz body. Low heat density protects both heater and liquids from carbonization or "frying". Acid tank heater features a non-corrosive fused quartz body. High heat density is radiated, not conducted.

Both electric immersion heaters have vapor-proof junction boxes. They are described as being light in weight, portable, easy to install, and designed for long service life.

Clepco-Glorod Immersion Heater Catalog is available from Cleveland Process Co., Department CP, 7016 Euclid Avenue, Cleveland 3, Ohio. When inquiring reader may simply specify CP 3179 on convenient Reader Service slip between pages two and three.

For Condenser Plates and Tubes... it's REVERE

Condenser plate for large steam power plant, ready to ship from a Revere mill.

In 1808 Paul Revere rolled the copper plates for the boilers of Robert Fulton's second and third steamships. Ever since then Revere has been a preferred source of supply for rolled non-ferrous plates. Today you will find Revere plates in marine and stationary condensers, heat exchangers, evaporators, feed water heaters and similar equipment in ships, chemical plants and refineries, public and private generating stations—wherever long service is essential.

Revere plates, like Revere condenser tubes, are available in all the customary alloys, shapes and sizes. For collaboration in selection of the most durable alloy, consult Revere.

And write on your company letterhead for a free copy of a most informative booklet: "Life Extension for Condenser Tubes."

REVERE
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.— Sales Offices in Principal Cities, Distributors Everywhere.

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

When inquiring check CP 3180 on handy form, pgs. 2-3

it pays to use....

MULTI-METAL WIRE CLOTH · FILTER CLOTH FILTER LEAVES · SCREENS

Whether it's wire or filter cloth, filter leaves, or semi or complete processing or handling equipment, Multi-Metal offers you the long experience, research, engineering and design service and precision fabricating facilities to build just what you need.

MULTI-METAL MAKES...

Wire cloth of any mesh, weave and alloy; by the roll or in fabricated units of any type and size.

Screens, filter leaves, strainers, sieves, discs, pads, baskets, trays, conveyor belts, semi-apparatus and complete processing equipment.

Write for Multi-Metal Catalog. It's packed with technical data and project planning aids. It's free.

Vertical pressure filter leaf

Write for a Copy

Leaves for horizontal pressure filter

Screen for filter plate

Combination fine wire cloth, sheet metal cribbing and flanges

MULTI-METAL WIRE CLOTH CO., INC.

1356 GARRISON AVENUE • NEW YORK 59, N. Y.

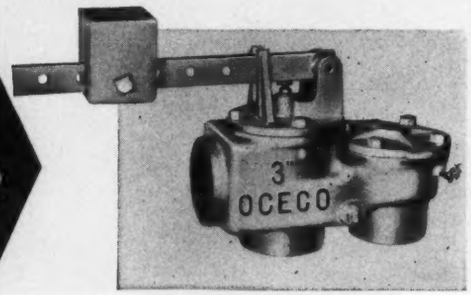
When inquiring check CP 3181 on handy form, pgs. 2-3

OCECO

V-109

Still Type

VALVES



● These valves combine both vacuum relief and pressure relief in a single body and avoid the necessity of using two separate valves when both vacuum relief and pressure relief are desired. 3 inch, 4 inch and 6 inch sizes. Steel bodies. Bronze, stainless steel or aluminum trim. Can be furnished with vacuum relief settings from 1 oz. to 10 oz. per square inch. Pressure relief settings from 2 lbs. to 25 lbs. per square inch. For temperatures up to 650° F.— working pressures up to 30 lbs. per square inch. Write for fully descriptive data sheet.

OCECO TANK FITTINGS

THE JOHNSTON & JENNINGS CO.

division of PETTIBONE MULLIKEN CORP.

4751 West Division St. • Chicago 51, Illinois

When inquiring check CP 3182 on handy form, pgs. 2-3

NEW LITERATURE

How circuit breakers reduce maintenance

Application of circuit breakers to reduce downtime and maintenance is discussed in booklet. Actual cases show how the replacement of fused devices with circuit breakers result in improved continuity of operation.

Complete design and operating details are provided, and typical applications for each of seven different types of enclosures are given. A basic selection chart for general purpose NEMA 1A sheet steel enclosures is provided, as well as a downtime cost comparison sheet for circuit protection.

Booklet B-5456 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 3183 on handy form, pages 2 and 3.

Metal electrodes offer larger sensing area

Ruggedly constructed to withstand temperatures to boiling or above, large-area metallic electrodes assure fast response, minimum polarization effect, easier cleaning and maximum thermal stability. Electrodes — platinum, gold, silver or nickel — are available mounted in 3 styles for all kinds of industrial and laboratory service.

Cat 86-11, giving complete information on these electrodes, is issued by Beckman Instruments, Inc., Dept. CP, South Pasadena 1, Calif. When inquiring specify CP 3184 on handy form, pages, 2 and 3.

Standard castings without patterns

Catalog lists thousands of standard castings of iron, semi-steel, and non-ferrous metal available in all sizes, shapes, and forms without patterns.

Latest Myerstown Foundry catalog is issued by Myerstown Foundry & Machine Works, Dept. CP, Box 296, Myerstown, Pa. When inquiring specify CP 3185 on convenient Reader Service slip between pages two and three.

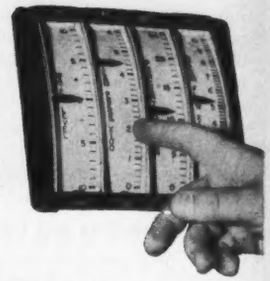
a new miniature indicator!

removable units— interior illumination

easy to read—5 inch scale, no parallax

easy correlation of related functions

easy zero check from the front



HAYS Miniscale Gages

This miniature instrument is especially suited for remote indication of such variables as pressure, draft, flow or level.

The scale is only 5 inches long—easy to read—internally illuminated. Choice of pneumatic or electric transmission. Also available is the Hays direct reading miniscale gage for indicating *pressures* of fluids (steam, water, gas, oil, etc.) directly. Gages are arranged for flush or semi-flush mounting. Either a yoke mounting, for as many as 12 units, or a keyhole clamp mounting for individual units can be provided. *Write today for Bulletin 52-1075-223.*

THE **hays** CORPORATION

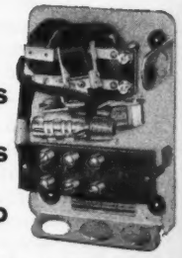
MICHIGAN CITY 34, INDIANA

When inquiring check CP 3186 on handy form, pgs. 2-3

MERCOID

TRANSFORMER-RELAYS

FOR VOLTAGES UP TO 550V. A.C. or D.C.



NO SPRINGS OR CLAPPERS

NO WELDING OF CONTACTS

NO MAINTENANCE REQUIRED

UNAFFECTED BY DUST, DIRT OR PITTING

ENGINEERED FOR LONG OPERATING PERIODS

Recommended for all applications requiring a very quiet and dependable mercury switch relay with low voltage pilot circuit. Available in many circuit arrangements. Our engineering staff will gladly assist in the adaptation of a Mercoid Relay for your particular problem.

Write for Catalog No. 700R

THE MERCOID CORPORATION, 4201 BELMONT AVE., CHICAGO, ILL.

When inquiring check CP 3187 on handy form, pgs. 2-3

Densitometer provides convenience and speed in spectrography

A densitometer comparator, utilizing the two-beam optical null method employing a servo-type automatic balancing system, reads density directly on a linear scale with a high degree of accuracy, stability, and simplicity of operation. Instrument is designed primarily for convenience in measuring the density of line spectra on photographic plates. Unit provides useful information for a large number of applications where optical transmission or density of photographic materials is desired — spectrography, photography, X-ray photography, calibration of neutral filters, etc.

Features, specifications and operating principle of unit are described in informative, 8-page bulletin. Photographs and diagrams supplement the text.

Bul 39 is issued by Baird Associates, Inc., Dept. CP, 33 University Rd., Cambridge 39, Mass. When inquiring specify CP 3188, pages 2 and 3.

Industrial air conditioning — completely instrumented

Illustrated four-page data sheet describes humidity measurement and associated equipment which makes possible direct humidity readings from remote locations. Several photographs show centralized air conditioning control panel in a textile plant, various elements and components of the system, and schematic drawings picture control system for air washer and actual temperature-and-humidity controllers.

As well as describing system benefits and application, publication gives general specifications and detailed descriptions of some components.

Data Sheet No. 10.5-4a is issued by Industrial Division, Minneapolis-Honeywell Regulator Company, Dept. CP, Station 64, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 3189 on handy form, pages 2 and 3.

Bulletin describes research studies pertaining to fuels and energy

Some of the research studies which an endowed foundation has conducted for industry and the government in the fields of energy and fuels are outlined in factual booklet. Several of these studies contributed directly to increasing the supply and lowering the cost of energy available to the various segments of industry.

Studies which are described in bulletin fall into such fields as boiler corrosion, flame oscillations, coal gasification, spark-ignition reactions, internal combustion, desulfurization of petroleum products coal drying, synthesis of fuels, peat technology, and related fields.

"Battelle Research in Energy and Fuels" is issued by Battelle Memorial Institute, Dept. CP, 505 King Ave., Columbus 1, Ohio. When inquiring specify CP 3190 on handy form, pages 2 and 3.

Dust control system for this flour blending booth consists of Type D ROTO-CLONE and Airmat Arrester Aftercleaner. High cleaning efficiency permits both salvaging of valuable flour dust and recirculation of clean air to work area.

Fine dust from paint pigment mixer is removed and collected by Type W ROTO-CLONE. Hood designed for easy loading and minimum interference to mixing operation.

Typical dry mixing unit utilizing ROTO-CLONE dust control. Hood design permits maximum efficiency with minimum exhaust volume as well as easy loading and discharge of material.

MIXING
Fine Dry Materials?

ROTO-CLONE Can Provide Effective Dust Control at Every Stage of Your Operation

Weighing, loading, mixing, discharging, packaging or bagging—all such operations release dust in volume when they involve fine, dry materials. You can't escape it but you can control it with AAF ROTO-CLONE dust control.

ROTO-CLONE dust control may be either wet or dry collection or a combination of the two methods. Type of dust involved; degree of collection efficiency desired; method of recovery or disposal demanded—each is first evaluated in terms of your operation needs. Based on such facts, your ROTO-CLONE system is then "born", incorporating any number of *special* yet *standard* features drawn from the complete ROTO-CLONE line.

AAF offers you another important "assist" in the matter of hood design. Proper hood design results in lower equipment costs by assuring maximum efficiency with minimum exhaust volume—permits unrestricted movement of operators and free flow of materials. AAF engineers are qualified by long experience to consult with you on this vital part of your dust control system.

Equipment and experience—AAF has plenty of both to solve your most difficult dust problems. For information on ROTO-CLONE dust control call your local AAF representative or write direct—

You Can Expect the Best from

AAF **American Air Filter**
COMPANY, INC.
258 Central Avenue, Louisville 8, Kentucky • American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 3191 on handy form, pgs. 2-3

IN A FILTER OR STRAINER IT'S

design
accuracy
craftsmanship

FOR BETTER SERVICE

"CLEVELAND" FILTERS AND STRAINERS

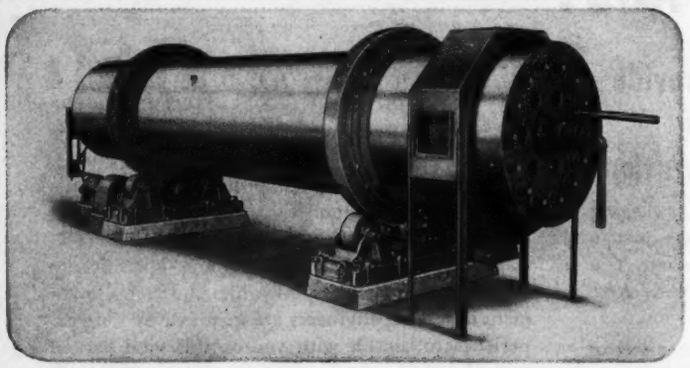
No task too big — no problem too small for CLEVELAND strainers and filters. We design, build and produce strainers and filters for every purpose in any size or dimension or metal.

Easy to order — our engineers will help you to analyze your problem. Send us your requirements!

WRITE FOR BULLETIN NO. 7

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78 STREET · CLEVELAND 5, OHIO

When inquiring check CP 3192 on handy form, pgs. 2-3



"DAVENPORT" ROTARY WATER TUBE COOLER

Your cooling problems can easily be remedied by installing a "DAVENPORT" Rotary Cooler.

These units are used on a wide range of dry granular material.

Let our engineers assist you.

Write for our illustrated catalog. Or, for quick reference, see your 1953 or '54 Chemical Engineering Catalog.

DAVENPORT MACHINE AND Foundry Company
DAVENPORT IOWA

DAVENPORT

De-Watering Presses and Screens
ROTARY
Steam Tube, Hot Air and Direct Fire Dryers
Water Tube and Air Coolers

When inquiring check CP 3193 on handy form, pgs. 2-3

Silicones

(*Continued from page 7*)

combination ran into trouble because they could be operated at temperatures hot enough to freeze the bearings. The next step, logically, was a silicone grease. And a silicone fluid with excellent viscosity-temperature characteristics was thickened with a metallic soap to solve that problem.

It might have been time for a smug feeling when the first silicone, (class H) motors were built, lubricated with silicone grease, and made to operate at temperature 200° Fahrenheit above the limit of conventional motors — but it wasn't. The next bogeys to pop up were blistering of the enamel on the motor frames and burning of the insulation on lead wires to the motor. Solving these fell into a familiar pattern . . . protective coatings made with silicone resins and resilient silicone insulation for lead wires . . . and this time no new problem developed.

Tests on silicone insulated motors under normal conditions were abandoned because it was impossible to make them fail in one man's life-time. It has been estimated that these motors might operate 1000 years at 275° Fahrenheit if brushes and metal parts didn't wear out.

Other members of the myriad silicone family have found uses as release agents in commercial bakeries and in the rubber industry, as damping fluids, polishing agents, textile finishes, special lubricants, bonding resins, protective coatings, molded, extruded, and foamed rubber parts.

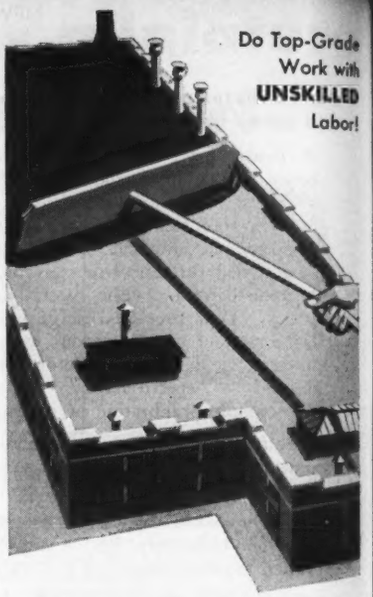
There are still lots of unexplored possibilities for silicones — Dr. Melvin Hunter, as research director, and T. A. Kauppi, manager of product development engineering are working on some of these as well as new processes for making starting materials. Production manager Howard Fenn and his men are constantly working to increase production and cut costs.

During the period when price *reductions* are rare, major fluid silicones have declined 40% in price in a five-year period. New plants are planned to increase production four or five times. While growth rate of the entire chemical industry has been about 9% a year, Dow Corning has been rocketing up at 40% a year.

It is unlikely, amid the welter of technical developments of this century, that the immediate future will go down in history as "the silicone age." But in many vital roles, silicones will play their part in taking us on to whatever future historians may name this era.

Study protective effects of lacquers and additives

A seven-page report details the research done on ultraviolet light absorbers in protecting lacquered wood from discoloration. Report points out that if the light color of a piece of furniture is to be preserved under normal room exposure, two conditions must be met: the lacquer must be such that it will not discolor in usage; the wood surface itself under the lacquer finish must be protected



NEW METHOD CUTS ROOF REPAIR...

and re-roofing costs in HALF!

You make big savings with Tropical's Roof Maintenance System. Lower cost, unskilled labor easily applies improved cold process materials, without training or special equipment. Because no heat is used, Tropical roofing material does not turn hard or brittle, retains tough plasticity for extra years of service! Ninety percent of leaky roofs can be saved, get added long weather-tight life this way. When re-roofing is needed, Tropical method gives a top-quality roof—cuts costs to the bone!

***FREE!* "Saving Old Roofs" tells whole money-saving story on new roof maintenance methods. Your business letterhead request brings a free copy—write today!**

•

THE TROPICAL PAINT & OIL CO.
1128-1236 W. 70th., Cleveland 2, Ohio

Heavy-Duty Maintenance Paints Since 1883

TROPICAL

Subsidiary of Parker Rust Proof Company

When inquiring check CP 3194 on handy form, pgs. 2-3

from any normal tendency to darken under the action of sunlight entering the room.

This report gives the results of certain work done at manufacturer's laboratories relative to the control of natural darkening of furniture woods under normal usage conditions. Of the numerous ultraviolet-light absorbers tested, the report lists two — substituted benzophenones — with a marked degree of effectiveness in retarding darkening.

"Color Stability in the Finish of Light Furniture" is issued by Hercules Powder Co., Dept. CP, Wilmington 99, Del. When inquiring specify CP 3195 on handy form, pages 2 and 3.

84 pages aid in selecting thermal insulation

In 84 pages, loose-leaf, leather-bound, two-color catalog lists Fiberglas insulation products; discusses their properties, uses, forms and sizes, coverings and accessories; and presents engineering data, application specifications and ordering information. Insulation forms described and illustrated are: pipe, equipment, duct, and low-temperature. Special insert describes Kaylo heat insulation.

"Industrial Insulations" is available to purchasing agents and specifying engineers who request it, on letterhead, from Owens-Corning Fiberglas Corporation, Dept. CP, Toledo 1, Ohio.

Info on inert-gas-shielded metal-arc welding

Thirty-page pamphlet opens with a brief introduction to arc welding and developments since World War I concerning protection of arc and molten metal from atmospheric contamination. Particular emphasis is given to welding in inert gas atmospheres leading to development of Inert-Gas-Shielded Metal-Arc Welding Process.

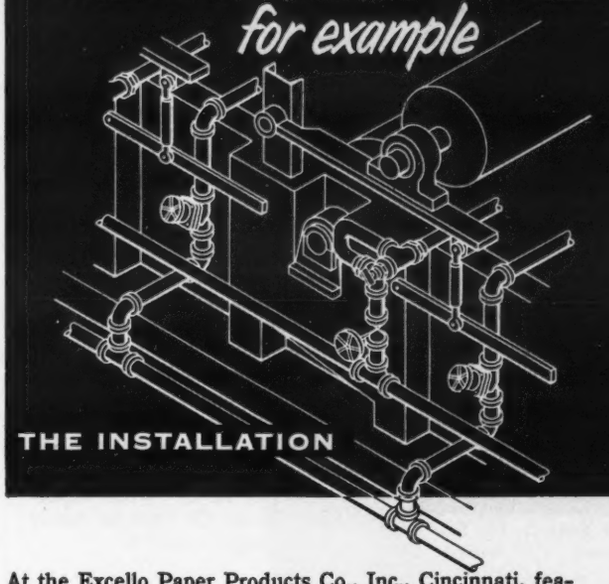
Development of the process, equipment required, necessary controls and their function are portrayed with the aid of sketches and photographs. Special sections are devoted to operation of equipment from operator's viewpoint as well as that of the supervisor and engineer. Safety precautions necessary for protection of operator are also included.

Characteristics of the inert-gas-shielded metal-arc and the mode of metal transfer are illustrated and explained. Effect of variables on operation of equipment in all positions of welding is clearly demonstrated. These variables cover both helium and argon and include gas purity, gas flow, size and condition of electrode wire, current, arc voltage and length, speed of welding, and the like. There is a whole section devoted to the application of the process when fabricating complex structures.

To obtain "The Inert-Gas-Shielded Metal-Arc Welding Process" remit $1.00 direct to the American Welding Society, 33 W. 39th St., New York 18, New York.

How This Valve Keeps Doing What Others Couldn't ... on White Water Service

for example



VALVE SERVICE RATINGS

SUITABILITY: "Made to Order" for tough jobs

FEATURES: Seats tight where others fail

MAINTENANCE COST: None - needs no attention

SERVICE LIFE: Many times longer than expected

OPERATING RESULTS: Machine room efficiency improved

AVAILABILITY: Crane Catalog item - No. 1610

At the Excello Paper Products Co., Inc., Cincinnati, featuring Crane Diaphragm valves on white water piping to cylinder tanks on paper machines.

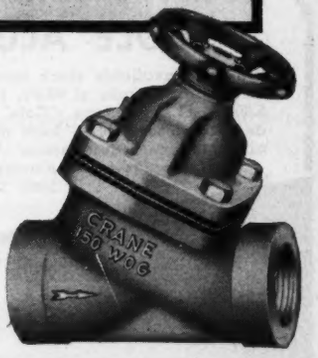
THE CASE HISTORY

Just previously, the plant had resorted to filling white water tanks manually with hose lines . . . so annoying and costly had been the trouble with valves formerly used in this service. Many had been tried, but none could handle the solids and fibers that built up in the bonnets and seats between tank fillings. Almost immediately, the valves became inoperable and leaked at the seat.

Keeping up with valve maintenance, the messy floors, and the safety hazard of white water leakage was an endless task. That's when the plant turned to the hose technique. But not for long, because Crane Diaphragm valves remedied the trouble. They were installed about 6 months ago. Machine room efficiency was improved. The white water leakage hazard to workers was stopped. Plant appearance was improved. And the Crane valves keep doing these things without a penny's maintenance cost to date.

THE VALVE

Crane Diaphragm valves are packless; they eliminate the annoyance and expense of stuffing box leakage. Bonnet and working parts are sealed to fluid; solids or sedimentary accumulation can't interfere. A pliable disc insert absorbs and seats tight on particles that cause leakage in other valves. Independent disc and diaphragm construction saves wear on diaphragm, and even should it fail, valve can be seated. Choose these valves from a wide selection of body and trim materials for corrosive, abrasive, and ordinary services. See your Crane Catalog or Crane Representative.



THE BETTER QUALITY...BIGGER VALUE LINE...IN BRASS, STEEL, IRON

CRANE VALVES

CRANE CO., *General Offices:* 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 3196 on handy form, pgs. 2-3

NERCO-NIRO
Spray Dryers*
Wheel of Progress
For Chemical Processors
The Nerco-Niro Spray Dryer atomizer wheel symbolizes progress . . . and profits for processors of chemicals.
Use the finest modern equipment to assure a finer product. Nerco-Niro engineers can show you how to:
Maintain control of uniformity in particle size.
Assure effective control of bulk density and in handling liquids of high viscosity and concentration.
Get a higher percentage of solids recovery.
Nerco-Niro Spray Dryers are easy to operate, require very little maintenance and consume little power.
Write now for further information.
NERCO NIRO
NICHOLS Engineering & Research Corp.
NERCO-NIRO SPRAY DRYER DIV.

* Pat.

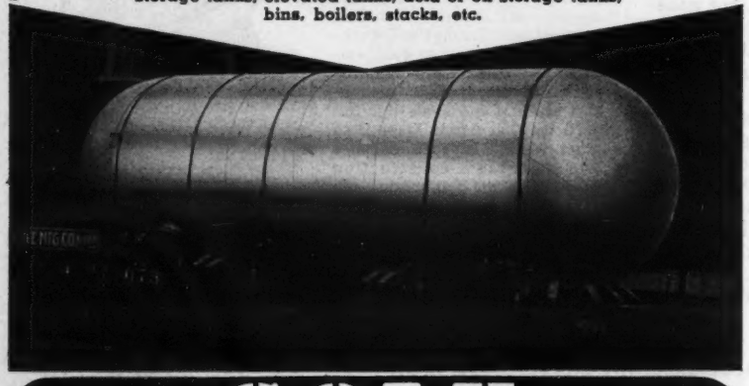
Room 3107, 70 Pine St., New York 5, N. Y.

Indianapolis Pasadena Montreal

When inquiring check CP 3197 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.

NEWNAN, GA. Established 1854

When inquiring check CP 3198 on handy form, pgs. 2-3

NEW LITERATURE

Seeks to define behavior of plastic materials

Basic research project was started with the objective of finding out how one plastic behaves under stresses, strains, varying temperatures and aging. Work on 13 samples of methyl methacrylate is developing simple empirical equations to express to engineers the generalized behavior of plastic materials as affected by composition, type of load, rate of load application, and temperature.

Bulletin contains numerous photographs showing several types of testing equipment which have been developed during the course of the project. Objectives and accomplishments of program are outlined in detail.

"Research in Plastics" is issued by Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., N.W., Washington 5, D. C. When inquiring specify CP 3199 on handy form, pages 2 and 3.

Disc filters seal tight

Two-page, illustrated bulletin describes two positive-seal cylinder type disc filters, one of which is a center-feed unit. Both were designed primarily for applications where leakage and/or evaporation cannot be tolerated.

Bul on ECD and ECF filters is issued by Ertel Engineering Corporation, Dept. CP, Kingston, N. Y. When inquiring specify CP 3200 on handy form, pages 2 and 3.

Origin and uses — facts on asbestos

Facts, in compact form, about the origin, location of deposits, uses, analyses, grades, and qualities of asbestos are presented in 20-page booklet. It is recommended for reference purposes and is almost pocket size for convenience.

To obtain "The Asbestos Factbook" remit 25c direct to Secretarial Service, Dept. CP, 808 Western Saving Fund Bldg., Philadelphia 7, Pa.

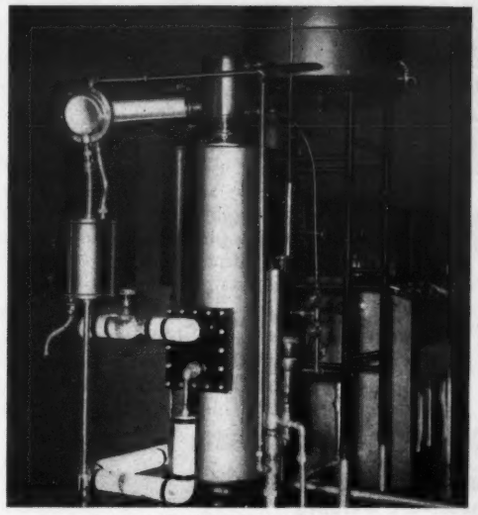
HOW

ASTRA PHARMACEUTICAL PRODUCTS, INC.

puts **Barnstead**

PURE WATER

to work



TALK ABOUT VERSATILITY —

WANTED: the purest non-pyrogenic distilled water for use in injectable solutions . . . AND low-cost, mineral-free pure water in quantity for washing operations. That's the problem that faced Astra Pharmaceutical Products, Inc., of Worcester, Mass., maker of XYLOCAINE HYDROCHLORIDE (ASTRA), a new local anesthetic. For the answer, Astra turned to Barnstead, the *only* manufacturer of both water stills and water demineralizers. Now Astra's non-pyrogenic distilled water is provided by a Barnstead SMQ-20 steam-heated "Q" still, while two Barnstead FR-2 Demineralizers supply plenty of pure, mineral-free water for washing . . . and evaporator-feed water for the water still as well!

Since 1878 Barnstead has solved thousands of Pure Water Problems in every field, from plating to cosmetics, from printing to electronics. Let our engineers help solve your Pure Water Problem without cost or obligation.

Write for Catalog F, describing Barnstead Water Stills, or Catalog 123 on Barnstead Demineralizers, or both.

75 Years of Progress in Pure Water

1878 1953

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Forest Hills
Boston 31, Mass.

Barnstead
STILL & STERILIZER CO.

When inquiring check CP 3201 on handy form, pgs. 2-3

Convention & Exhibit Schedule 1953

Aug. 19-21. Western Electronic Show & Convention, Civic Auditorium, San Francisco, Calif.

Aug. 24-28. X-ray Diffraction School, Sir Francis Drake Hotel, San Francisco, Calif.

Aug. 31-*Sept.* 1. Natural Resources Research Institute, University of Wyoming, third biennial briquetting conference, Banff Springs Hotel, Alberta, Canada.

Sept. 6-11. American Chemical Society, 124th National Meeting, Chicago, Ill.

Sept. 13-16. Electrochemical Society-104th meeting, Wrightsville Beach, North Carolina.

Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, California.

Sept. 17-19. American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.

Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.

Oct. 6-8. Electric League of Western Pennsylvania, Fourth Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Pa.

Oct. 8-9. Society of the Plastics Industry, New England section meeting, Equinox House, Manchester, Vermont.

Oct. 12-16. National Association of Corrosion Engineers, short course on cathodic protection, University of Illinois, Urbana, Ill.

Oct. 19-22. Society of Industrial Packaging & Materials Handling Engineers, short course, Mechanics' Hall, Boston, Mass.

Oct. 19-23. National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.

Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.

Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.

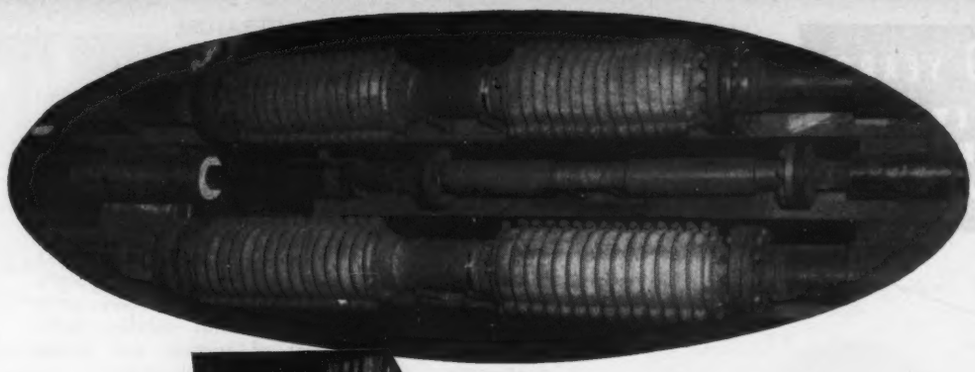
Oct. 29-31. Federation of Paint & Varnish Production Clubs, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 2-4. American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.

Nov. 17-18. American Institute of Electrical Engineers, conference on recording & controlling instruments, Benjamin Franklin Hotel, Philadelphia, Pennsylvania.

Nov. 30-*Dec.* 5. 24th Exposition of Chemical Industries, Commercial Museum & Convention Hall, Philadelphia, Pa.

Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, St. Louis, Mo.



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to control piping expansion and contraction—

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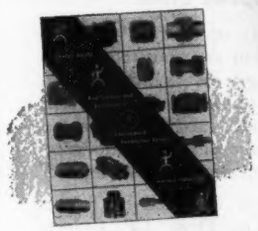
EXPANSION JOINTS

save space . . . require no maintenance . . . save time and money!



Here's your guide to PIPING MOTION CONTROL

The Flexon Expansion Joint Design Guide gives detailed specifications, and selection and application data for Flexon Expansion Joints. Write for your copy or see Flexon Expansion Joint Catalogs in Sweet's, Chemical Engineering Catalog and The Refinery Catalog.

You can have all the advantages of leakproof, maintenance-free pipeline motion control in a compact, easy-to-install, in-line unit when you use Flexon Expansion Joints. There is no repacking . . . no bulky, space-consuming installation . . . just install the Flexon Expansion Joint as easily as putting in a fitting, and then forget it.

Flexon Expansion Joints are offered with stainless steel or copper pressure carriers in Controlled-Flexing, Free-Flexing or Flexoniflex types. Units are available for pressures up to 5500 psi, temperatures to 800° F. (1600° F with special alloys). All types suitable for handling radial, axial and/or lateral pipe motion.

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FORMERLY CHICAGO METAL HOSE CORPORATION

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

Flexon identifies products of Flexonics Corporation that have served industry for over 50 years.

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SERVICE

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for PURITY

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Capric	92%	" "
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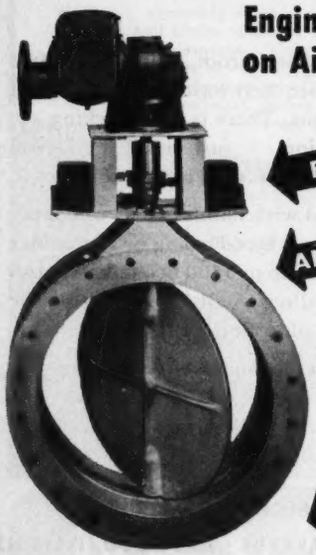

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ALL TYPES Butterfly, wafer or slide valves, 1" to 120" pipe size.

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Sales Representatives in Principal Cities

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NEW LITERATURE

Paper presents MoS_2 as a lubricant

Technical paper covers an analysis of pure molybdenium disulfide and the qualities which are said to make it an ideal lubricant. These qualities include its chemical stability, electrical properties, purity, anti-corrosion properties, thermal stability, coefficient of friction, and various methods of application.

Complete with a series of graphic illustrations, the paper is said to be one of the most complete technical discourses on the lubricating qualities of this compound to date.

Reprints of paper "Properties and Uses of Pure Molybdenum Disulfide as a Lubricant" as presented before a meeting of the American Society of Lubrication Engineers in Milwaukee, Wis., in Mar., 1953, are available from The Alpha Corp., Dept. CP, 179 Hamilton Ave., Greenwich, Conn. When inquiring specify CP 3205 on handy form, pages 2 and 3.

Flexibility featured by variable-speed drive

Flexibility of control, use, and application are featured by variable-speed drives discussed in 4-page bulletin. Illustrations are included and rating tables, shaft-center distances, and complete dimensions are reviewed.

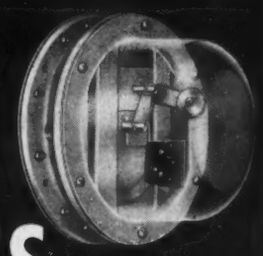
Bul V-532 is issued by Reeves Pulley Co., Dept. CP, Columbus, Ind. When inquiring specify CP 3206 on handy form, pages 2 and 3.

Data book on metal hose

Technical data book contains 24 pages of compact, complete information on application, dimensions, couplings, assemblies, and temperature ranges of various types of metal and wire braided hose.

Types of flexible metal hose illustrated and described include: seamless all-metal flexible pressure hose; interlocked suction, blower, and conveyor hose; square-locked conduits and flexible spout tubing; high pressure

NEW LOW PRICES on BIN-DICATOR



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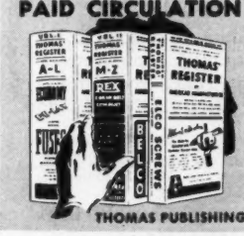
..the encyclopedic "guide to buying"

T. R. provides more accurate and complete "where-to-buy" information and purchasing data than all other sources combined. 10,384 Advertisers use 38,943 advertisements in the 1953 Edition.

THOMAS REGISTER

PAID CIRCULATION



The National Purchasing Guide for all Industry!

THOMAS PUBLISHING COMPANY, 461-8th AVE., N.Y. 1, N.Y.

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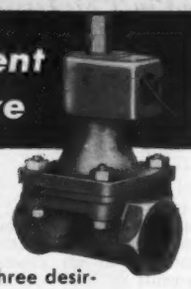
Another ASCO Development
SPECIAL Bulletin 8336 Valve



Combining . . . Automatic Remote Pilot Control with the . . . Saunder's Type Diaphragm Valve

With this valve, you can bring into your flow control three desirable operating advantages:

- **You can install a non-clogging, tight-seating, corrosion and abrasion resisting, diaphragm valve suitable for corrosive liquids and gases.**
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This valve can be installed in any position and is available normally open or normally closed. It controls flow in either direction. Wide selectivity in body and contact material provides bronze, stainless steel, cast iron, Saran and sanitary bodies, rubber or glass lined, etc. Pipe sizes: ½ to 2 inches; heights: 6 5/16 to 10 1/16"; face to face: 2 7/8 to 7".
This valve is but one of many ASCO Types, *all operating with automatic and remote control.* Write us in detail about your control problem. You'll be contacting "Electromagnetic Control Headquarters". This has been our business for close to seventy years.

If you would like a copy of our New Solenoid Valve Catalog, for your files, be sure to let us know.

ASCO Solenoid Valves
Automatic Switch Co.
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When inquiring check CP 3209 on handy form, pgs. 2-3

What's
A "New Solution"?

It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.
Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

hydraulic hose; single wire-braided hose for low pressure; and others for vibration elimination, steam, and special uses.

TDB U-111 is issued by Universal Metal Hose Co., Dept. CP, 2133 S. Kedzie Ave., Chicago 23, Ill. When inquiring specify CP 3210 on handy form, pages 2 and 3.

Info on incubators

Complete details of company's line of incubators and paraffin ovens are given in 8-page catalog. Units range in size from working chamber of 13 x 14 x 13" to room incubators with 105 running ft of shelf area.

Beside their applications in hospitals and laboratories, units have other industrial uses where constant-temperature cabinets and rooms are needed for temperatures up to 60°C (140°F).

Cat 100, sec 2 is issued by Chicago Surgical & Electrical Co., Div. of Labline, Inc., Dept. CP, 217 N. Desplaines St., Chicago 6, Ill. When inquiring specify CP 3211 on handy form, pages 2 and 3.

Catalogs blast cleaning hose machines

Describing blast cleaning hose machines which are produced for industry's hand-operated cleaning jobs, 28-page bulletin includes data on applications and accessories.

The two fundamental methods of applying abrasive, direct pressure and suction, are discussed as well as applications of both wet and dry abrasives. Tables are printed which show relationship between orifice area and circumference in nozzle sizes, and air flow with required horsepower to develop air jets of varying diameters.

Selection of proper type of unit is discussed, and a table indicates how to match nozzle size to size of abrasive being used.

Bul 100A is issued by Pangborn Corp., Dept. CP, Hagerstown, Md. When inquiring specify CP 3212 on handy form, pages 2 and 3.

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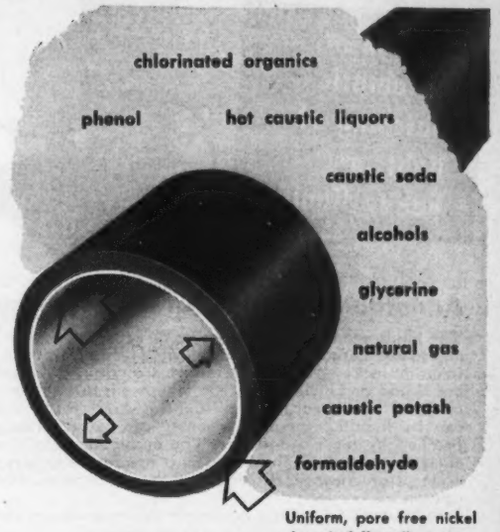
Low Cost Corrosion Control



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Pipes - Tubings - Fittings

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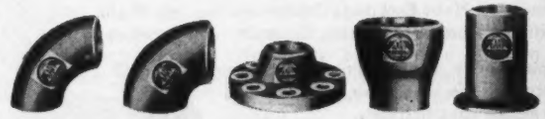

Write Dept. P-8 today for complete details and technical data. Names of large users of LECTRO-CLAD available on request.

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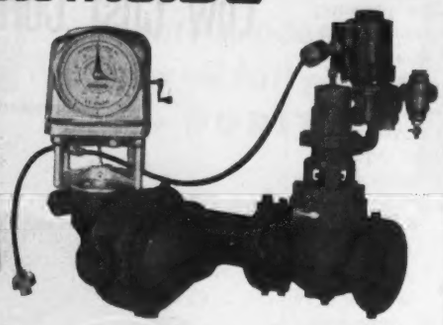
229 Main Street Belleville 9, New Jersey

Exclusive territories available to qualified distribution organizations.

When inquiring check CP 3213 on handy form, pgs. 2-3

THE *Fluidometer* SYSTEM

for the automatic batching of light or heavy liquids



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The Fluidometer System provides an accurate, dependable, and completely automatic method for batching liquids, either light or heavy. It is available in either jacketed or unjacketed construction, and is adaptable to practically any liquid measuring problem, whether it involves gallons, barrels or tank car lots. Equally accurate on liquids of high or low viscosity. Anything that can be handled through a meter can be accurately batched by the Fluidometer. The automatic reset, an exclusive feature of Fluidometer, is invaluable in large scale production work requiring steady repetition of operations.

Bulletin Fl-49, giving complete information on the Fluidometer System, will be sent on request.

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M&L

When inquiring check CP 3215 on handy form, pgs. 2-3

Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

☆ Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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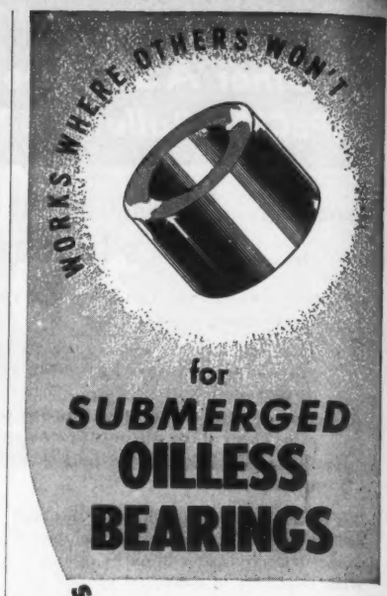

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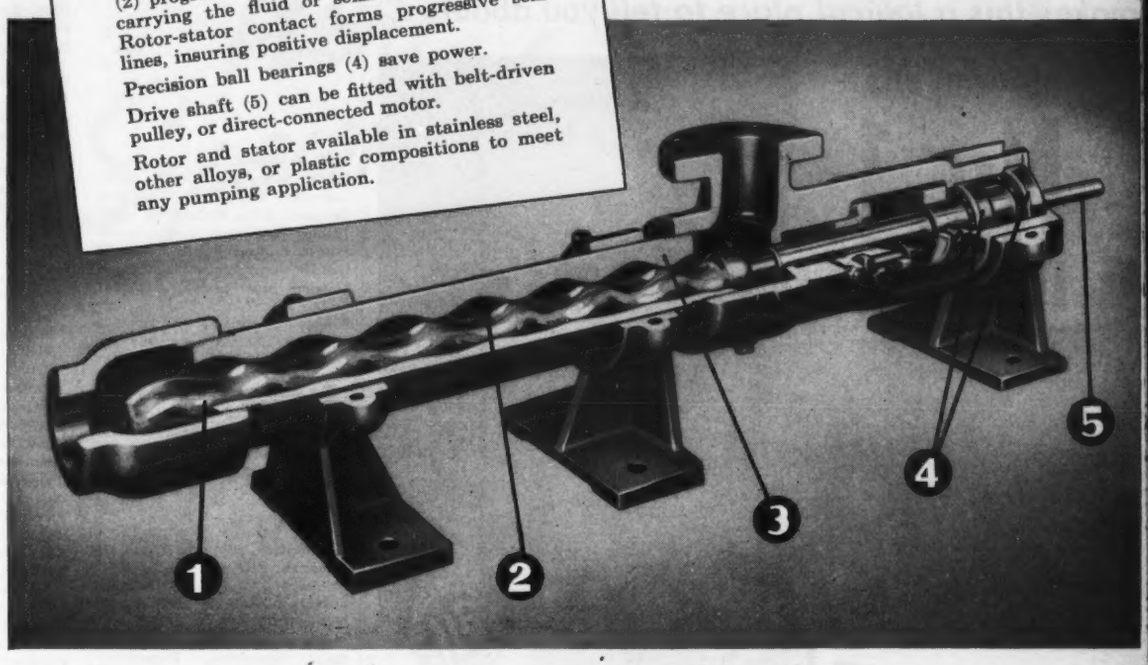
How it works: as the rotor (1) turns, cavities (2) progress toward the end of the stator (3), carrying the fluid or semi-solid with them. Rotor-stator contact forms progressive seal lines, insuring positive displacement.

Precision ball bearings (4) save power.

Drive shaft (5) can be fitted with belt-driven pulley, or direct-connected motor.

Rotor and stator available in stainless steel, other alloys, or plastic compositions to meet any pumping application.



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You name the problem! Are your pumped materials viscous, semi-solid, hard to move? Do they tend to disintegrate? Are they abrasive? Do pump maintenance costs seem high? If "yes" is the answer to any of these, find out why Moyno Pumps handle jobs where other pumps fail!

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Will it solve your problem? Chances are it will . . . at least there isn't a more versatile pump made! Moynos pump clay for a leading pottery maker. They're being used for handling white water in paper mills . . . for caustics . . . an Eastern food producer is even using them successfully for pumping potato salad!

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basic PUMP SELECTION GUIDE

Learn BASIC FACTS before deciding on TYPE of PUMP

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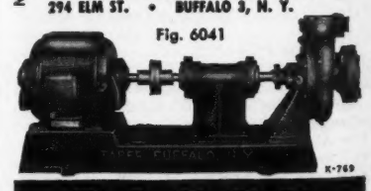

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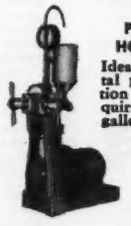

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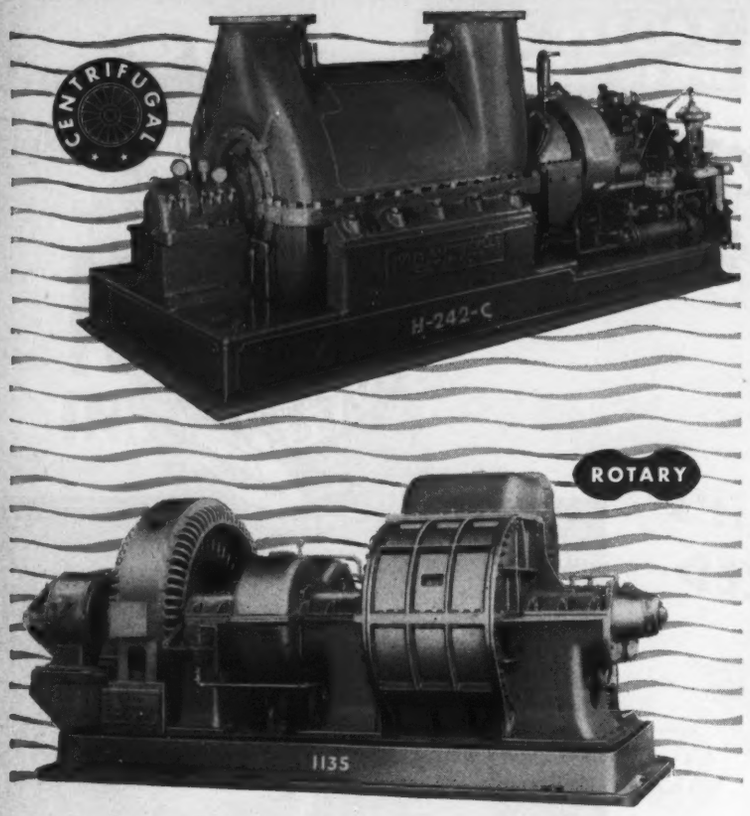

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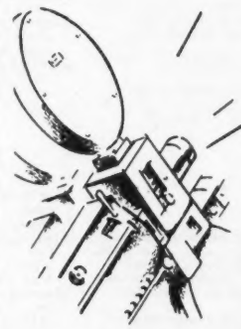
2. Twenty-three offices and three branch factories—with stocks of Garlock products—situated in most principal cities throughout the United States—convenient to you for prompt shipments and competent service.

3. Factories, laboratories, service engineers, resident engineers and pilot plant at Palmyra, New York—with background of sixty-six years' experience in the manufacture, application and development of superior quality mechanical packings—GARLOCK—The Standard Packing of the World.



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GARLOCK PACKINGS, GASKETS, OIL SEALS, MECHANICAL SEALS, RUBBER EXPANSION JOINTS

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POSITIVE Feed Action

—LARGE FREE-FLOWING HOPPER OPENING
—NO CLOGGING IN THE WORMS!

CAPACITIES TO

1½ Million Pellets Every 60 Seconds!

The improved feed action of the Welding Engineers Auxiliary Worm Extruder is realized in all sizes of machines . . . from the twin screw 2" model with a 3½" diameter hopper, used in laboratory work and small scale production . . . up to the large machines. The 6" model has a 10" x 12" hopper which permits acceptance of material which might otherwise be impossible to get into the worms. These are compact, self-contained units which process at high rate output. *If you are interested in:*

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Auxiliary Worm Extruder

There is a wide range of sizes in Welding Engineers' line of Auxiliary Worm Extruders from laboratory models producing 125,000 pellets per minute to the largest model capable of extruding 1,500,000 pellets of 3/16" diameter every minute.

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with descriptive data, illustrations of models and the complete story of the Welding Engineers Auxiliary Worm Extruder

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Over 80 years of Ross experience in the manufacture of Mills and Mixers of all types assures the proper selection of equipment to fit your specific processing requirements.

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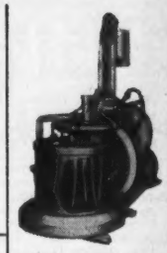
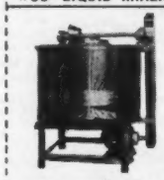


#30C—CHANGE CAN MIXER



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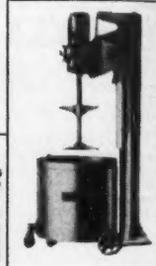

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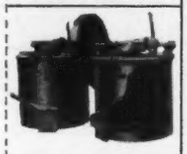

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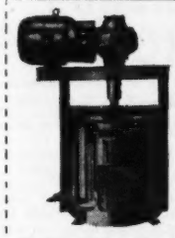

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Mixers available in laboratory, pilot scale, and large production sizes.

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A TYPE FOR EVERY USE! **PERFECT SEAL even with pipe not in alignment!**

Standard & Double Extra Heavy **UNIONS**

Available with screwed or socket weld ends. 3000-lb. sizes 1/8" to 3"; 6000-lb. sizes 1/8" to 2".

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With screwed or socket weld ends. 3000-lb. and 8000-lb. service.

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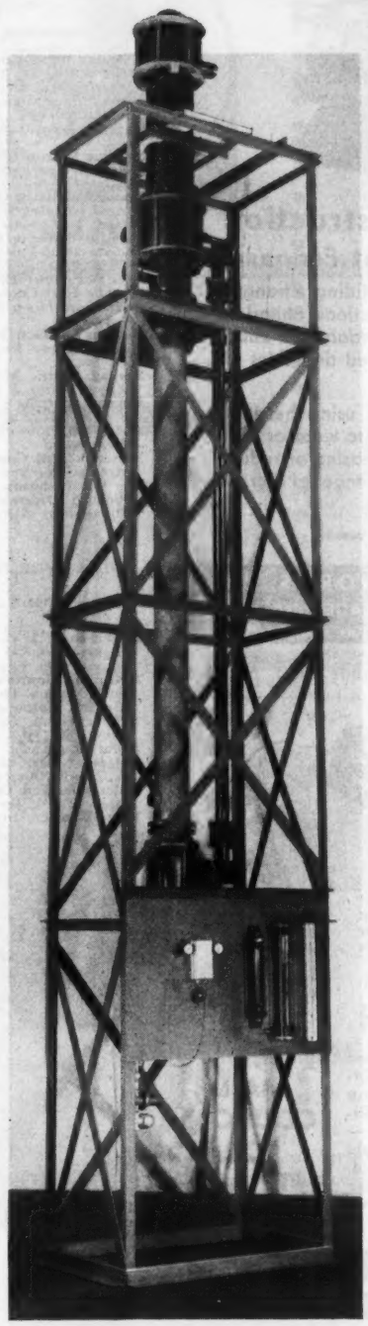

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a long life of non-stop production in all concentrations of HCl

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. . . also

Heat Exchangers

Pumps, Towers

Pipes, Valves

Fittings

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Falls Industries, Inc.
AURORA ROAD - SOLON, OHIO

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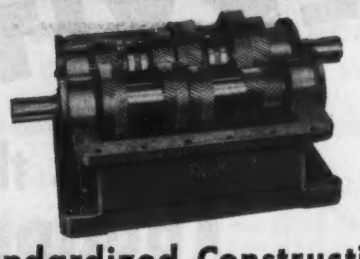
Philadelphia
CHANGE-SPEED UNIT



Standardized Construction
—to give you Greatest Economy

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Units are positive geared drives using herring-bone gears throughout. No belts to wear or slip. Ratios are definite for speed increasing or reduction or in combination. Wide range of horse-powers in 2, 3 and 4 speed units.

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Patch broken factory floors without the usual traffic tie-up. Simply shovel INSTANT-USE into the hole or rut — tamp smooth — truck over! No waiting! INSTANT-USE bonds tight to old concrete — right up to a feather edge. It's tough. Wears like iron. Won't crack or crumble. Install complete overlay where floors are badly chewed up. Used indoors or out. Immediate shipment.

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INSTANT-USE

FLEXROCK COMPANY (Offices in principal cities)
3611 Filbert St., Philadelphia 4, Pa.

Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN and HAND BOOK OF BUILDING MAINTENANCE—no obligation. (Clip and attach Coupon to Company letterhead).

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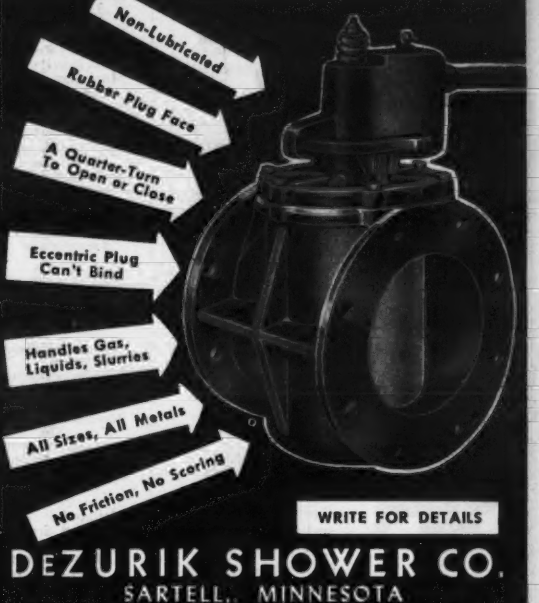
THEY DON'T LEAK!



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DEZURIK SHOWER CO.
SARTELL, MINNESOTA
MADE IN ENGLAND BY MILLSPAUGH, LTD., SHEFFIELD

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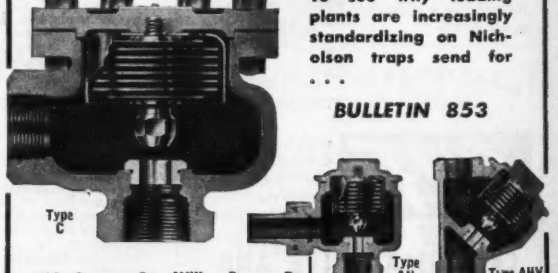
STOP AIR BINDING, Raise temperature 35°

Equipment temperatures were up 30° to 40° higher after Nicholsons replaced mechanical traps in his plant, according to Chief Engineer H. F. D. He also reports faster warm-up, stating that all air-binding was relieved. And "saving in steam waste cut our fuel cost at least 10%". 5 types for process, heat, power. Sizes, ¼" to 2"; press. to 250 lbs. To see why leading plants are increasingly standardizing on Nicholson traps send for . . .

BULLETIN 853



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"That's Interesting"

Glass-jar government

English universities are using a mechanical device to help economists visualize the operation of a national economic system. Pink colored water (representing money) flows in and out of glass tubes and jars labeled "government spending," "savings," "private investments," etc. It is possible that this form of planned economy may supplant the crystal ball. (*Dyelines and Bylines*)

Marathon for ducks

It seems that newly hatched ducklings must be kept moving to be kept alive and one poulterer has met the problem by using a slowly moving wire belt to minimize his duckling mortality. Placed on the belt, they just keep walking — sometimes as long as eight days.

Box-hinges molded-in

A plastic box with plastic hinges molded right into the box and lid is designed to offer lower cost containers for specialty products. A rubber gasket inside the cap assures a leak-proof fit. (Tri-State Molding Co., Henderson, Ky.)

Bromine is tamed

Brom 55 (dibromo dimethyl hydantoin) is a crystal powder containing 55% bromine, which can be shipped or stored without refrigeration. (McKesson & Robbins, Inc., 155 E. 44th St., New York 17, N.Y.)

Chemicals going up!

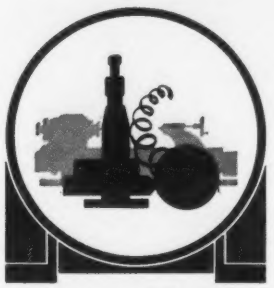
According to MCA's *Facts Book* the US Chemical industry has expanded fourfold since 1939. Incidentally, it takes 7 to 10 years to bring a new chemical product to market.

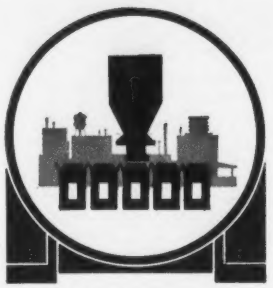
Piggy-back railroad

A possible solution to the congested highway traffic situation has been suggested by William A. Bauer, Baker-Raulang Co., Cleveland, Ohio. Mr. Bauer has proposed a "piggy back" transportation system which would use railroad flat cars to carry highway trailers for inter-city freight hauls. Since the trailers would be moved by rail, they would not compete with commuter and tourist traffic. According to Mr. Bauer, the method has been tested and found workable in New York, New Haven, and Hartford.

Loss of moisture foiled

Tests show vegetable yields can be increased from 25 to 100% by using aluminum foil as mulching material. Foil turns the trick because it holds moisture in the earth, keeps soil temperature up to 20° cooler during the heat of the day. It also prevents leaching away of fertilizer. (*Kaiser Aluminum News*)


Metal Working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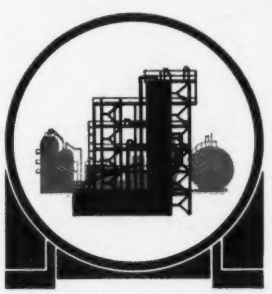
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Springboard to Democracy!

The invention of movable type may be said to have actually propelled mankind toward self-government.

For it meant that ideas could be communicated to all... not just the few who had access to costly, hand-written manuscripts. Slowly the people learned to read, to question, to demand a better life.

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CARBON PAPER: RCI inorganic chemical pigment colors.

CASTINGS: FOUNDREZ powdered phenolic resins (for the shell molding process); FOUNDREZ liquid phenolic resins and FOUNDREZ core oils (for core binders).

FURNITURE, PLYWOOD, FLOORING, HARDBOARD AND CHIPBOARD: HYDROPHEN phenolic glues; PLYACIEN protein glues; PLYAMINE urea-formaldehyde glues; PLYOPHEN phenolic and resorcinol-formaldehyde glues.

LEATHER: BECKOSOL alkyd resins (for leather finishes); PLYOPHEN resorcinol-formaldehyde resins, SUPER-BECKACITE pure phenolic resins, SYNTHE-COPAL ester gums (for leather adhesives).

LINOLEUM: BECKOSOL alkyd resins and PENTACITE pentaerythritol resins (for linoleum coatings); RCI inorganic chemical pigment colors.

PAINTS, VARNISHES AND LACQUERS: BECKACITE (1) fumaric, (2) maleic and (3) modified phenolic resins; BECKAMINE urea-formaldehyde resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; BECKOSOL (1) phenolated, (2) phthalic-free, (3) rosin modified, (4) pure drying and (5) pure non-drying alkyd resins; KOPOL processed Congo copals; PENTACITE pentaerythritol resins; STYRESOL styrenated alkyd resins; SUPER-BECKACITE pure phenolic resins; SYNTHE-COPAL ester gums; WALLKYD pure drying alkyd resins (for alkyd flat wall vehicles); WALLPOL vinyl-type copolymer latex emulsions (for latex flat wall coatings); RCI inorganic chemical pigment colors.

PAPER: BECKAMINE urea-formaldehyde resins (for adding wet strength, improving the wet rub of starch-clay coatings, and waterproofing starch adhesives); RCI inorganic chemical pigment colors (for paper coloring); STYRESOL styrenated alkyd resins (for paper coating).

PRINTING INKS: BECKACITE fumaric, maleic and modified phenolic resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; RCI inorganic chemical pigment colors.

TYPEWRITER RIBBONS: RCI inorganic chemical pigment colors.

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